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CONTENTS.

Original Communications.

Four Cases of Stone in the Bladder, with Hypertrophy of the Prostate Gland, Where Positive Diagnosis Was Impracticable Until Double Castration Resulting in Atrophy of the Prostate Rendered the Passage of a Stone-searcher Possible. By Orville Horwitz, B.S., M.D.... 73
Puerperal Mastitis. By J. A. Murray, M D. 75
Delayed Resolution in Pneumonia, and Its Treatment. By Alfred Stengel, M.D. 78
The Climate of Atlantic City and Its Usefulness in Disease. By William Edgar Darnall, A.B., M.D ... 83
Danger of Injury to the Heart in the Tapping of the Pericardium for the Relief of Pericardial Effusion. By H. A. Hare, M.D. 88
The Post-operative Treatment of Surgical Cases. By Thomas Leidy Rhoads, M.D. 92

Leading Articles.

The Use of Hypodermic Injections of Salt Solutions in Uremic Eclampsia. 96
The Use of Permanganate of Potassium in Opium Poisoning 97
The Production of Anesthesia by Schleich's Mixtures 98
The Treatment of Gonorrhea 98

Reports on Therapeutic Progress.

Primary Tuberculosis of the Rectum, with Report of Cases 95
Hypnotics: Their Contraindications and Ill Effects 101
Cases of Genito-Urinary Diseases Treated by Kava-Kava 104
The Production of Plasmatic Cell Juices from the Lower Germs 105
Gelatin as a Hemostatic 107
Antipyrin and Lactation 109
Death After Wormseed 109
Formaldehyde as a Disinfectant 110
The Treatment of Eczema with Picric Acid 111
Notes on the Treatment of Status Epilepticus 112
Treatment of Burns 113
The Treatment of Spasm of the Larynx in Infants 113
Pulmonary Tuberculosis Treated by Ichthyol 114
The Treatment of Erysipelas in the New-born by Antistreptococcic Serum 114
The Treatment of Excessive Sweating. 115
The Absorption of Iron and Its Hypodermic Administration 116
On the Value of Arsenic and Belladonna in the Treatment of Chorea. 117
Further Observations on the Use of Hydrogen Dioxide in the Treatment of Blepharitis Marginalis 117
The Modern Management of Diphtheria and Croup Cases 119
The Treatment of Cardiac Affections Dependent Upon Arteriosclerosis. 122
The Abortive Treatment of Influenza by Calomel 122
Successful Treatment of Circumscribed Traumatic Aneurism of the Right Internal Carotid Artery Within the Cranium by Means of Ligature of the Common Carotid.. 122
On the Use of the Gigli Wire Saw to Obtain Access to the Brain 123
The Conservative Surgical Treatment of Uterine Fibroids 124
A New Incision for Arthrectomy, Resection, and for Reduction of Irreducible Dislocation of the Shoulder-joint 127
A Case of Strangulation of the Ileum by Passage Through a Congenital Mesenteric Hole; Operation; Recovery 128
Secretion Neurosis of the Colon 129
The Application of Hot Water in Surgery. 129
Treatment of Colles' Fracture 131
The Treatment of Coxalgia. 131
The Treatment of the Pains of Ataxia by Methylene Blue 132
Chronic Proctitis 132
Contusions of the Abdomen 134
The Treatment of Tetanus by Antitetanic Serum 135
Reviews 136

Correspondence.

London Letter 138
Berlin Letter 140
Extraction of a Broken Water Tumbler from the Rectum 142
Ingrowing Toe-nail 143
Cause and Prophylaxis of Baldness . 143
A Case of Poisoning by Convallaria Majalis 144
A Case of Poisoning by Honey 144

Original Communications.

FOUR CASES OF STONE IN THE BLADDER, WITH HYPERTROPHY OF THE PROSTATE GLAND, WHERE POSITIVE DIAGNOSIS WAS IMPRACTICABLE UNTIL DOUBLE CASTRATION RESULTING IN ATROPHY OF THE PROSTATE RENDERED THE PASSAGE OF A STONE-SEARCHER POSSIBLE.

BY ORVILLE HORWITZ, B.S., M.D.,

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The result of a trial for malpractise of a prominent physician of Baltimore induces the writer to lay before the profession the histories of four cases of double castration, undertaken with a view to producing atrophy of the prostate gland, in order to make an examination of the bladder practicable, and to determine the existence, or otherwise, of urinary calculi.

These cases may possibly be of interest to the profession, as they in a measure demonstrate that in some instances positive diagnosis of the existence of stone in the bladder is impossible where hypertrophy of the prostate exists, especially if the middle lobe be so much enlarged as to render the passage of the stone-searcher impracticable, unless a suprapubic cystotomy or a double castration be resorted to; the latter operation, it is now conceded, causing atrophy of the hypertrophied gland.

When the enlarged gland has sufficiently dwindled, the stone, if it exist, can be readily located and extracted by suprapubic cystotomy, or crushed by lithotrity.

A brief history of the cases is here presented:

CASE I.—S. A., seventy years old, broker, had been suffering from symptoms of cystic stone, which gradually intensified, for the past five years. When first seen he stated that he voided his urine many times during the day and night. He experienced great pain at the meatus urinarius at the termination of each act of micturition. The urine often contained blood, which at times was passed after urination. The urine was cloudy, offensive, with an alkaline reaction, and contained a small quantity of albumen, with pus, blood-corpuscles, and crystals of phosphates and oxalates. The percentage of urea was low. Examination per rectum revealed an enormously hypertrophied prostate. Many attempts had been made to pass a stone-searcher, but without success. The only instrument that could be introduced into the bladder was a small-sized rat-tail rubber catheter, which was passed with difficulty. When the catheter was introduced the bladder was found to contain five ounces of residual urine. The capacity of the viscus was six and one-half ounces. The patient's sexual functions had long been lost. He was told that he was probably suffering from stone in the bladder, but that it was impossible to make a positive diagnosis until the enlarged prostate, which caused the obstruction, had been reduced in size. A double castration was advised. His consent having been given, the operation was performed. Two weeks later a stone-searcher was readily passed, and the existence of calculi easily detected; these were removed by the operation of suprapubic cystotomy, and the patient made a rapid recovery.

CASE II.—L. T., sixty-five years old; mariner. History precisely similar to Case I. The obstruction produced by the enlargement of the prostate permitted the passage of a very small Mercier catheter only. Double castration was performed. Fourteen days after the operation a stone-searcher was readily introduced, and a large-sized calculus was found, which was removed by suprapubic cystotomy. The patient made a rapid and uneventful recovery.

CASE III.—G. C. B., sixty-two years old; manufacturer; affected with hypertrophied prostate. In addition to the usual symptoms he complained of great pain in the glans penis, especially after urination. He frequently passed blood before, during and after the act of micturition. Pain and hemorrhage were increased by riding over rough roads. Had had two attacks of retention of urine. The middle lobe of the prostate was found to be greatly enlarged. A stone-searcher was introduced with difficulty. Owing to the enlargement of the middle lobe an exploration of the bladder was not possible. The sexual powers of the individual were completely lost, and he willingly gave his consent to the performance of a double castration preliminary to cystotomy. Ten days after the operation the stone-searcher was readily passed, and two good-sized calculi were found in the pocket posterior to the prostate, and were removed by a suprapubic operation. The patient left the hospital one month after entering the institution entirely relieved.

CASE IV.—H. Q. M., seventy-one years old, retired merchant, stated that he had had "trouble with his bladder" for the seven years preceding his application for treatment. He complained of pain in the head of the penis, neck of the bladder, and over the pubes, after passing water. Had frequent attacks of hematuria, and one attack of ischuria. The flow of urine from the bladder was very difficult to start. The urine was cloudy, offensive, alkaline, and contained albumen, pus, leucocytes, and crystals of phosphates and oxalates. The prostate was very much enlarged. The only instrument that could be introduced into the bladder was a very small hard-rubber English catheter. Double castration was performed, and fifteen days after the prostate had sufficiently shriveled to allow of the introduction of a stone-searcher, when a calculus was readily located. It was small and was easily crushed by the use of Forbes' lithotrite. Patient made a slow but complete recovery.

In each of these cases there was marked obstruction of the urethra, due to senile hypertrophy of the prostate, complicated with chronic cystitis, with symptoms of prostatitis and stone in the bladder. In no case was it possible to make a positive diagnosis of stone; in but one could the stone-searcher be introduced, and then, owing to the great enlargement of the middle lobe, it was impossible to utilize the instrument for the purpose of exploration.

The existence of a calculus was suspected in each case, and the patients were distinctly

informed that double castration was but a preliminary operation.

Two of the individuals were sent to me by their respective family physicians, with a diagnosis of stone in the bladder; in neither had hypertrophy of the prostate been suspected, no physical examination having been made. The two others were referred to me as cases of "obstructive" hypertrophy of the prostrate, the complication with vesical calculus not having been suspected.

A study of the history of the cases here submitted would seem to warrant the following conclusions:

That in cases of hypertrophy of the prostate, where enlargement is so great that a stone-searcher cannot be passed, or if it can be inserted, a thorough exploration of the bladder cannot be made, a positive diagnosis of calculus is not feasible.

That where the hypertrophy is so great that a positive diagnosis of stone in the bladder cannot be made, a double castration is an entirely justifiable operation as a preliminary measure to insure shrinkage of the hypertrophied gland, provided the patient has already lost his virile power, and is otherwise a proper subject for the operation.

That a surgeon is not to be held blameworthy if he is unable to say positively whether a vesical calculus does or does not exist, if the entrance to the bladder is obstructed by the condition of the prostate to such an extent that a stone-searcher cannot be introduced, or if inserted, cannot be properly utilized to explore the organ, or if the existence of a calculus cannot be detected by resorting to the *x*-ray. (In this connection it may be remarked that two of the four cases whose history has been recounted in this paper came under the writer's care after the great discovery of Roentgen had been announced to the world, and that this method was used as a means of diagnosis, but failed in each instance.)

That in all cases of hypertrophy of the prostate, where exploration of the bladder by the stone-searcher is either impossible or nugatory, and where double castration is recommended, the patient should be advised of the possibility of the existence of a vesical calculus that can only be detected with certainty after the gland has become sufficiently atrophied to allow of the passage of the sound. Should a calculus be present it can be readily removed by a subsequent operation.

*PUERPERAL MASTITIS.**

By J. A. Murray, M.D.,
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I have selected this subject because it is one of the most important diseases we are called upon to treat, and one which is, to a very large extent, preventable if early precautions are taken. A lack of success in the treatment of this disease may greatly mar one's reputation. This is especially true if the case be a primipara, and singularly enough it is in this class of cases that inflammation of the breast mostly occurs. There are few things that bring more condemnation upon the young practitioner than to have the young mother's confinement followed by mastitis with resultant mammary abscess, and perhaps destruction of the breast.

One eminent authority claims that the disease occurs in one-fourth of all child-bearing women during the period of reproduction; and the fact that there is so very little written about this condition in most of our textbooks has led me to bring the subject before the Society with the hope that it may aid some of us in its prevention and treatment.

In this article I will only speak of its cause, symptoms, and treatment.

It was long believed and taught that puerperal mastitis was due to an engorgement of the gland with milk; but though there is still some uncertainty about what effect "milk stasis" has on the production of mastitis, the generally accepted theory of pathologists and bacteriologists is that the condition is of bacterial origin.

Although engorgement of the breast with milk no doubt acts as a predisposing cause, especially in that form where the parenchyma of the gland is involved, it seems to have been proved that inflammation followed by pus formation cannot occur without the introduction of the pyogenic cocci—the microbes of suppuration. While admitting that "milk stasis" acts as a predisposing cause, there can be no doubt that the important factor in its production is infection from without.

If antisepsis has proved nothing else, it has convinced the obstetricians of the world that aseptic and antiseptic treatment directed to the breast has greatly reduced the frequency of this disease. The most frequent point of infection is through an abraded or fissured

*Read before the Clearfield County, Pa., Medical Society.

nipple, and the source of the infecting micro-organism is the child's mouth, patient's and nurse's fingers, or unclean appliances used about the breast, such as unclean linen, dirty nipple shields and breast pumps. It has not yet been proved whether the germs enter the breast through the lymph-channels or the milk ducts. Some authorities contend that the microbes of infection enter both ways, and to decide which is correct is no easy matter. So far as the treatment is concerned it makes but little difference, except when massage is used, and in this respect it is very important to make the differential diagnosis. This point will be made clear when speaking of the treatment.

In connection with the etiology and pathology of mastitis it must not be forgotten that some authorities put forth the claim that the disease is also due to micro-organisms in the mother's blood, which have been absorbed from some abrasion, tear or injury of the parturient canal or genitalia; to decomposing clots or placental tissue which have been retained in the uterus. It has also been known to follow phlebitic infection and inflammation. I have seen one case where a mammary abscess followed a severe phlebitis which practically destroyed the whole breast.

There are three principal varieties of the disease, viz., the glandular or parenchymatous, subcutaneous, and subglandular — the latter belonging to the connective tissue variety.

I will only dwell briefly upon the symptoms, except when I differentiate between the different forms of the disease, which is quite important with regard to treatment. The different varieties of mastitis are all accompanied by the signs of inflammation. At first there may be only uneasiness or soreness of a part of the breast. This will shortly be followed by chilliness or a distinct rigor; then elevation of temperature, often reaching as high as 103° to 105° F.; increased pulse-rate, pain, tenderness of one or all of the lobes, which soon become indurated, followed by a reddened skin over the diseased area. Since the glandular or parenchymatous variety is by far the most frequent and the one most amenable to treatment, I will describe the symptoms more fully and mention one distinctive differential point. This is important, since it is the subcutaneous and subglandular variety which mostly results in pus formation and mammary abscess. In the glandular variety, by careful examination you will be able to distinguish one or more distinct, hard, circumscribed, tender nodules, due to milk stasis, in this portion of the breast. The skin overlying this may be only faintly reddened. The pain produced by manipulation is not so severe as in the other varieties. The temperature goes very high, often reaching 105° F. If the disease is not aborted at this stage the milk undergoes chemical changes; sugar is converted into lactic and butyric acids; the casein is coagulated, and in it great quantities of bacteria are found. The micro-organisms now infiltrate the connective tissue surrounding the acini of the glands, and the disease rapidly passes into the interstitial variety, complicating it with the glandular.

It will, however, sometimes occur that the connective tissue between the acini of the gland will become affected almost simultaneously with the acini themselves; in such instances it will be impossible to make a differential diagnosis. In these cases the treatment should be directed to the parenchymatous variety, which will be described later. In the connective tissue variety, which is less frequent, the interstitial connective tissue around the acini undergoes an inflammatory condition and the patient will complain of a very painful spot, which is not so well outlined as in the glandular form. The characteristic nodule of the glandular form is not so apparent. The pain is generally much more severe if manipulation or pressure is made upon the breast. There is a more gradual elevation of temperature in this form. By a careful examination it will be found that the nipple or areola is eroded, fissured, or macerated, or that they have previously been sore. The skin will early become reddened, shiny, and edematous, and this will generally correspond with that portion of the breast where the nipple or areola is fissured or eroded. This form generally goes on to an early pus formation and mammary abscess, regardless of early and persistent treatment. This is more especially the case if the nipple is much inflamed and does not quickly yield to treatment.

The first consideration is prophylactic treatment, which should begin during the last months of pregnancy, especially in primiparæ, and consists in putting the nipple in the most favorable condition for nursing. The pressure of tight clothing over the breast is contraindicated in the latter months of pregnancy, because it causes retraction of the nipples. For one month before labor the nipple and breast should be treated by mild antiseptic washes daily to remove all seba-

ceous materials. Astringents and alcoholic applications should not be used. They harden the cuticle and thus predispose to fissures. The best method after daily antiseptic cleansing is the application of warm cacao butter; this makes the nipple supple and flexible, and in most instances will give good results. The prospective mother should also be taught to draw out small and retracted nipples and treat them as above stated. She should observe strict rules of cleanliness during the whole period of lactation.

The milk should not be allowed to accumulate in the breasts. After the child has nursed the breasts should be cleansed with boric acid or bichloride solutions, followed by the application of cacao butter, which must be washed off with sterilized water before the child nurses again. To prevent milk stasis or engorgement the child must be taught to nurse early. If it cannot use all the milk, it is best to draw the extra quantity by massage, being careful to always stroke the breast in the direction of the milk ducts; this if properly performed is much better than any breast pump, which is often unsatisfactory and injurious. If there is hypersecretion of milk the quantity can be lessened more surely by compression than by any medicinal remedies yet discovered. This is best accomplished by placing a heavy layer of cotton over the breast and applying a binder. It is always advisable to cut a hole in the cotton and thus save compression of the nipple. If this does not sufficiently lessen the hypersecretion, it is wise to combine with it belladonna ointment or plaster over the breast, and saline purgation for its derivative action. The child should be taught from the very first to nurse at regular intervals of two or three hours. It should not be allowed to nurse more than fifteen minutes at a time, longer periods causing maceration of the nipple and destruction of the epithelium, which will afford a pathway for the ingress of bacteria.

Any macerations, erosions or fissures of the nipple or areola must be treated antiseptically at once, after which some bland ointment must be applied. Probably the very best treatment for fissured nipples is to paint them with a five-per-cent. solution of cocaine and then touch the whole fissured tract with a fine point of nitrate of silver stick. If the nipple is too painful to permit nursing, a nipple shield may be used with good results. The pain from nursing is often relieved by painting with a weak solution of cocaine and then coating it over with ethereal collodion or compound tincture of benzoin. Notwithstanding all the foregoing measures and precautions, the gland will sometimes go on to inflammation. It will then be necessary to put the breast to rest and take measures to relieve engorgement and lessen the tension and blood-supply. If the nipple is sore or abraded, it is always best to remove the child from the breast and thus favor healing of the nipple, lessen the pain and suffering, and decrease the secretive activity of the gland. This is also a wise precaution for the health of the infant, which may become ill from nursing milk charged with inflammatory products, and perhaps pus.

If we are now able to decide positively that the inflammation is of the glandular variety, then it is our duty to empty the gland by massage, combined with the breast pump, remembering the latter instrument only removes the milk from the lactiferous ducts in close proximity to the nipple; hence the importance of massage to facilitate the passage of milk from the acini of the gland. Having emptied the breast, we must now take measures to prevent large reaccumulations, which is best accomplished by compression, in the manner described for hypersecretion. At the same time we should use large derivative doses of saline cathartics.

After the tension of the breast has been relieved by the breast pump, massage, and compression, we should place an ice-bag on top of the binder over the most sensitive portion of the breast. This will tend to lessen the overdistended blood-vessels, relieve pain, and check the activity, multiplication and growth of the various microorganisms. The ice-bag should be used continuously till the pain is relieved and temperature falls. Should the ice-bag prove ungrateful to the patient, it will be better to place cotton compresses saturated with lead-water and laudanum upon the breast and cover this with a rubber dam, and over this apply the binder. Of course it must be remembered all the foregoing remedies are useless if the case when first seen has gone into beginning pus formation, as then we should direct our attention to an early evacuation of the pus according to the directions that will be given later.

When the inflammation is of the connective tissue variety, subcutaneous or subglandular, the treatment will differ from that just described. Compression should not be used.

The breast should be supported by a Murphy binder. Massage, so useful in the parenchymatous form, should not be attempted, as it is sure to increase the inflammation. We must now resort to lead-water and laudanum, saline cathartics, and extract of belladonna; glycerin spread over the breast is often very useful, but we must watch its physiological action lest too much be absorbed. It is in this class of cases that we will mostly discover abrasions, macerations and fissures of the nipples, which must be treated energetically and quickly cured if we are to avert suppuration. But in spite of all we can do this variety of inflammation will sometimes result in suppuration. We will now have a mammary abscess. To discuss the different forms of this condition and their treatment would occupy far more time than is allotted me for the reading of this article. So in a general way I will only state that all forms of mammary abscess, as well as any other pus cavity, should be evacuated the moment we are sure there is suppuration.

In opening these abscesses the incision should always radiate from the nipple in the direction of the lacteal ducts. If the abscess is superficial we may freeze the part with ethyl chloride and open under antiseptic precautions. If it is deep or post-mammary, the patient should be anesthetized, and after the skin and fascia is laid open we should go down with a grooved director. When we have located the cavity it is better to open it up with a dressing forceps sufficiently to admit a finger. If more than one cavity exists, they are all to be opened in the foregoing manner. By this method there is no danger of opening up the milk ducts, which often results in milk fistulæ which are difficult to heal. After the pus is thoroughly evacuated the cavity must be well irrigated with a warm two-per-cent. creolin solution or a weak solution of bichloride of mercury. The cavities and openings should then be packed with sterilized or medicated gauze, followed by antiseptic dressing and a firm bandage. After twenty-four hours this should be removed, the cavity again irrigated with a solution of hydrogen peroxide, strips of gauze placed in the drainage tracts, and a firm bandage applied. This is left for from twenty-four to thirty-six hours, when it is removed and irrigated again, an antiseptic dressing applied, and over this compression.

The foregoing treatment will generally result in cure in a very short time unless it be a post-mammary abscess, when more radical measures will be necessary, such as curetting the sinuses with a sharp curette or partially dissecting the gland from the walls of the chest, curetting the suppurating surfares, and then suturing the breast in position again; the freshened surfaces, where the sinuses or cavities existed, being sutured or effaced with catgut ligatures. During the treatment the patient should have nourishing diet and ferruginous and bitter tonics. Stimulants will be found valuable in some cases.

In the preparation of this paper I have drawn to a considerable extent, on treatment, from an able article by Dr. Richard Norris, of Philadelphia, for which I return thanks.

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*DELAYED RESOLUTION IN PNEUMONIA, AND ITS TREATMENT.**

By Alfred Stengel, M.D.,
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The pathology of croupous pneumonia is so well understood that I need not allude extensively to it. There is, however, one important point to which reference should be made, and that is the time relation of the crisis or decline of fever and other marked symptoms to the actual resolution of the disease in the lungs. To me the phenomena of the crisis are among the most strange symptoms of the disease. It seems well-nigh inexplicable that a patient with a consolidated lung should pass in the course of an hour or a few hours from the condition of extreme dyspnea, high fever and general nervous excitation, to one of normal temperature and general tranquillity, notwithstanding the fact that the lesion in the lung has not apparently changed in the slightest. We are all of us too prone to regard the resolution of the lung as more or less concomitant with defervescence. In typical cases of croupous pneumonia the temperature declines before the processes of resolution have begun, or at least before they have made any considerable progress. Careful examination reveals the fact that there is a decline in dulness two or three days after the crisis, but at least several days invariably elapse before there is extensive resolution even to the crude test of percussion.

Pathologically speaking resolution may fail on account of untoward changes in the diseased area or because of mere delay in the

* Read before the Section on Internal Medicine of the College of Physicians, Dec. 13, 1897.

ordinary processes. In the former instances the disease may terminate in abscess or necrosis of the lung, or in interstitial pneumonia (fibroid pneumonia). In the latter instances, after a more or less tedious course complete resolution finally takes place. While I believe it possible that these long delayed cases may be wholly normal in their histological course, I am convinced that in most instances there is at least some interstitial thickening of the septa and connective tissues generally which causes the greater delay in resolution. Termination in fibroid pneumonia of great extent or intensity is very unusual, and it is not my present intention to deal with such cases or with the termination in abscess or gangrene. I desire to limit my remarks entirely to instances in which there has been delay on account of moderate interstitial thickening, or, if such be possible, on account of mere sluggishness in the normal processes.

Delay in the resolution, as I have defined it, occurs more frequently in irregular pneumonic conditions, especially in such as are characterized by proliferative cellular processes—cellular pneumonia according to the classification of Buhl. Instances of this kind are met with among the pneumonias complicating infectious diseases and Bright's disease, and in secondary pneumonias following embolism. Other cases occur in the aged and in persons reduced greatly in vitality. The causes of delay in resolution in such cases no doubt vary in different individuals. Massive exudates are probably more difficult to absorb than moderate ones; and in any case weakness of the respiratory movements probably plays a part. Poor circulation and a weakened heart are further contributory conditions. Frank croupous pneumonia of young persons rarely shows any tendency to delay.

I wish now to sketch hastily the clinical features of a few instances. The first three are cases of pneumonia secondary to gynecological operations, and were most likely instances of embolism followed by pneumonia.

Case I.—Miss M. A. T., aged twenty-eight years, was admitted to the University Hospital May 11, 1896. During the last ten years she had suffered with dysmenorrhea and pain in the back, and during the last two years she had complained of paroxysmal pain in the left iliac region, increasing backache, headache, and other nervous disturbances. There was a family history of phthisis, but she herself had been generally in good health. Gynecological examination showed a retroflexed and retroverted uterus with a fibroid tumor the size of a pea in the right cornua. Celiotomy was performed on May 15 and the uterus attached to the abdominal wall. Recovery from the operation was prompt and the wound healed by first intention, but on the 20th she began to complain of pain in the right side and suffered with slight cough; this continued for several days without much aggravation and without definite physical signs. On June 1 the pain increased and she became distinctly more uncomfortable. Physical examination now discovered indistinct dulness at the right base posteriorly, and the patient expectorated slightly blood-tinged sputa. During the next several days the dulness became more distinct but not absolute, and bronchial breathing was confined to a small area. The disease continued with slight fluctuations during several weeks, the patient's general condition never being alarming in the least degree, but blood-tinged expectoration occurred now and then until shortly before her discharge from the hospital. Her general strength improved considerably, but the dulness never disappeared entirely, and the breathing, though no longer bronchial, remained harsh in expiration. During the height of the disease carbonate of ammonia, strychnine sulphate and whiskey were administered freely. On June 12 iodide of potash was ordered and was continued until her discharge from the hospital several weeks later.

Case II.—Mrs. S., thirty-seven years old, was admitted to the University Hospital April 12, 1897. She had been married nineteen years and was the mother of two children, the youngest being twelve years of age. She had been in good health since the birth of her first child eighteen years ago. On admission to the hospital she was decidedly anemic in appearance, and was brought in in the ambulance looking as if she had been ill in bed for several weeks. She gave a history of having suffered with pain over the entire lower abdomen and as high up as the umbilicus. This was not severe, though continuous, and she complained of a bearing-down sensation in the back, with profuse leucorrhea. Ten days before admission she had been taken with sudden pain in the upper thigh and calf of the leg. This occurred during the night, and was followed at once by swelling of the leg. The limb was

slightly swollen on admission. Her family history was good, though a sister died of phthisis. The gynecological examination showed bilateral laceration of the cervix, and dislocation of the uterus towards the right. Tubo-ovarian disease of the left side the size of a baseball was discovered, and a smaller mass similar in character on the right side. Celiotomy was performed April 16, 1897, and a large tubo-ovarian abscess with adhesions was discovered on the left side. Both tubes and ovaries were removed. In the operation several ounces of pus escaped into the abdominal cavity, and a drain was therefore inserted. On the 19th of April the drain was removed and a tube was inserted instead. On the 25th the tube was removed.

On June 20 the patient was suddenly seized with severe pain in the base of the right lung, and was found in a condition bordering on shock. The breathing in the area indicated was harsh and accompanied by friction sounds and fremitus. The temperature rose to 100½°. Stimulants were administered and a strong mustard poultice applied.

Subsequently dulness developed and expectoration of a rusty character followed. In a few days hemorrhagic expectoration made its appearance, the sputa at times being almost pure blood. The patient was extremely weak, pulse irregular and feeble, and the respirations were rapid. After five days the temperature declined from the moderate elevation (99° to 100°) to the normal, and remained practically at the normal until her discharge from the hospital. Resolution of the lungs did not occur as is customary in pneumonias, and the case continued almost unchanged for at least two weeks after the temperature had first declined. There were, however, occasional elevations to 99° or more. She was ordered stimulants and tonics and directed to breathe deeply several times during the day. The case resulted in complete resolution after one month's duration.

Case III.—Mrs. M., aged forty-two, had been married twenty-five years. She had had no children. She was admitted to the University Hospital March 2, 1897, complaining of frequent and painful micturition of some years' duration, and with dysmenorrhea and menorrhagia of later origin. There was a feeling of weight and bearing down, and she suffered with headaches and profuse leucorrhea. The urine was normal. The patient had always been in perfect health until the present trouble. The family history was negative. A fibroid tumor of large size was discovered in the abdomen, and for this celiotomy was performed. The uterus, tumor, tubes and ovaries were removed. The vessels were ligatured after removal of the mass and the abdomen closed without draining. For several days the patient's condition was satisfactory, though the pulse was irregular and rather rapid. Then there was sudden pain at the base of the left chest with indistinct dulness and signs of pneumonic consolidation. There was little expectoration, and this was not hemorrhagic. The temperature at first declined, as had the other symptoms, but subsequently reached a greater elevation than at first. The pulse and respirations became exceedingly rapid, and the patient succumbed after ten days.

The autopsy showed the following conditions: The heart was exceedingly small and flabby. The endocardium and valves were normal, but the myocardium was brownish in color and evidently degenerated. At the root and base of the left lung was found an area of consolidation involving a considerable portion of the lower lobe. This was hemorrhagic in the center and firm; more decidedly pneumonic in the peripheral portions. Throughout there was evidence of advancing organization, as far as could be judged by the macroscopic appearances.

I have reported these three cases as types of pneumonic conditions seen after gynecological operations or in the puerperium. They represent a form of embolic or thrombotic pneumonia that has come under my notice a number of times and has sometimes caused me a great deal of anxiety. Two previous cases (one after ventral fixation and one after some other gynecological operation) and two subsequent cases in puerperal women resembled these closely in the irregularity of development, in the incompleteness of the pathological development, and three of the four in the tediousness of resolution.

A different class of cases may be illustrated by the notes of the two following cases:

Case IV.—An old man, a patient under my care at Blockley Hospital, presented general arterio-sclerosis and damaged kidneys (pale, watery urine, small trace of albumen, fine granular casts). One morning he was found exceedingly feeble, and the nurse, taking the temperature, found it to be 103°. The pulse was rapid and the respiration a little hurried. Physical examination revealed a moderate degree of dulness at the left base, with fine subcrepitant râles and semi-bronchial breath-

ing. During the subsequent forty-eight hours the dulness extended and eventually involved the lower lobe completely. Stimulants were freely administered, and to our surprise the patient gained in strength and the fever declined after seven days' duration. Subsequently the temperature became irregular, rising at times to 102°, but generally remaining about normal or subnormal. The lung, however, did not show signs of resolution for two or two and a half weeks. Tonics were administered freely and iodide of potassium given for a week without notable effect. Finally blisters were applied and seemed to be beneficial, as the evidences of resolution followed promptly. A month after the decline of the temperature the chest gave no evidences of the pneumonia.

CASE V.—The following notes were made: J. R., aged forty-five years, white, a salesman, was admitted to Blockley Hospital June 9, 1896. Previous history showed that the patient had had the common diseases of childhood; rheumatism three years before admission; specific infection twenty years previously. He used alcoholics and tobacco excessively. Cough for past year; subject to colds. His present condition: a fairly well developed man; chest, some depression under right clavicle, restricted expansion over left side; respirations chiefly abdominal. Left base, increased fremitus and slight dulness. Vesicular murmur harsh; pleural friction. Cough hard and dry. He gave a history of a chill a few hours before admission. Temperature 102°, pulse 80, respirations 28; face flushed; skin dry; slight expiratory groan.

June 10, 1896. Respirations increased; temperature high; cough severe, slight blood-tinged expectoration; increased vocal fremitus; dulness over left base, especially along axillary border. Restricted breathing; a few crepitant râles (scarcely any air seems to enter this portion of lung).

June 11. Temperature 101°, respirations 30, pulse 100. Dulness marked in left lower lobe; bronchial breathing; bronchophony; whispered pectoriloquy; expectoration rusty; diplococcus found.

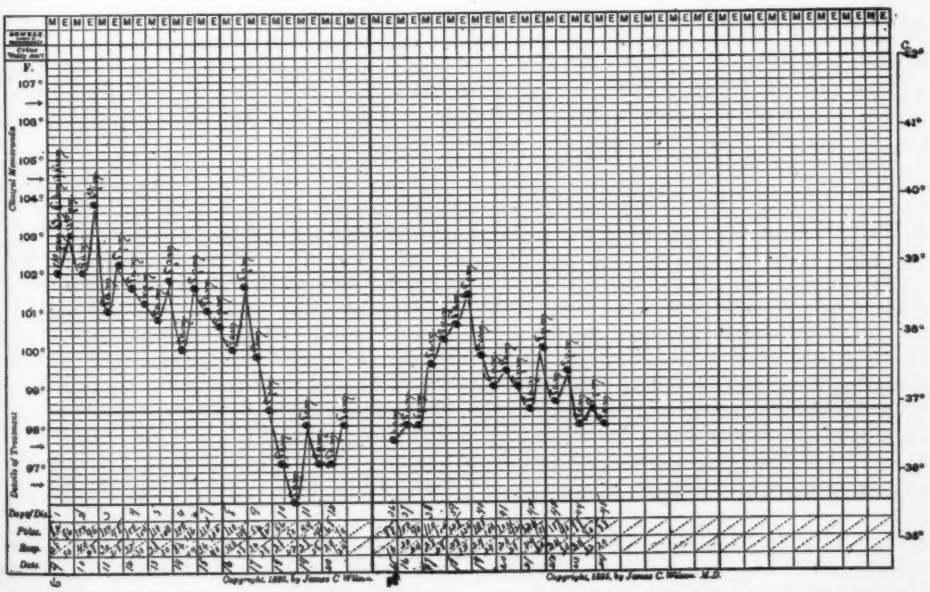
June 12. Temperature 104°, pulse 49; complains of severe pain in side; bradycardia, pulse 49.

June 17. Temperature normal; but few râles in chest, feels easier.

June 18. Temperature 96°; bradycardia; few râles; bronchial breathing and pectoriloquy about the same.

July 1. Chest signs about the same; temperature remains low; says he feels well.

Later, the lung showing no signs of resolution, despite various forms of treatment, it was determined to produce an abscess in the subcutaneous tissues to test the value of this procedure. I explained to the patient that this form of treatment was experimental and would probably be useless and certainly



CASE V.—The first curve shows the febrile movement in the primary pneumonia. The break in the chart represents an apyretic interval of nearly four weeks, and the second curve the fever following the turpentine injection.

painful. He was willing, however, to have it undertaken.

July 15, 2 P.M. Injected turpentine, one-half drachm, into subcutaneous tissue of right side of chest (anterior axillary line about the eighth rib). During the rest of the day he complained of severe pain at the seat of injection; slept but a short time during night. Temperature 102°.

July 16. Area of injection red and swollen; the left base remains about the same.

July 17. Seat of injection very red and angry looking; extremely tender over consolidated lung; fine râles on inspiration.

July 18. Beginning softening is apparent.

July 21. Abscess formed; evacuated about eight fluidounces of creamy pus. No bacteria. Lung clearing rapidly.

July 23. Abscess doing well; only very slight harsh breathing over left base.

August 4. Has gained in weight; chest perfectly clear.

The condition of the blood is shown in the following figures:

	Red corpuscles	White corpuscles.
July 15	4,201,000	31,563
July 16	4,665,000	15,625
July 17	4,690,000	.....
July 18	4,245,000	7,549
July 19	4,735,000	10,770
July 20	4,600,000	7,688
July 21	4,760,000	15,137
July 22	4,900,000	17,188
July 23	4,290,000	17,550
July 25	4,910,000	13,281
July 27	4,265,000	13,010
July 29	3,810,000	14,985

DIFFERENTIAL COUNTS OF LEUCOCYTES.

	Polymorphous.	Mononuclear and transitional.	Lymphocytes.	Eosinophiles.
	Per cent.	Per cent.	Per cent.	Per cent.
1. Before injection of turpentine, June 20	30	5.2	45.2	19.6
2. After injection, July 17	71.2	6	20	2.8
3. July 21	85.1	4.1	8.8	2

In this case there was not the slightest sign of resolution during a full month prior to the development of the abscess, and immediately after this the dulness diminished, moist râles became audible, and the breathing became less bronchial. In a few days the lung had cleared entirely, and the patient soon recovered completely.

Treatment.—In discussing the treatment of delayed resolution it is well to recognize that several causes contribute. These I have referred to above, but may again enumerate as excessive exudate, poor aeration of certain areas, feeble circulation, and to these may be added general enfeeblement of vitality.

Various remedies have been suggested and different authors have regarded this or that drug as most efficacious. For my own part I am convinced that no form of medicinal treatment is particularly useful. I have employed tonics, stimulants, arsenic and iodide of potassium and ammonium repeatedly in the above reported cases, or in others not here recorded, without observing the slightest effect. Stimulants seem to me most rational, but I cannot say that they have ever in my experience done good by themselves.

Counter-irritation has, however, been of apparent benefit in every case in which I have made trial of it, and generally in proportion to its severity. Strong mustard poultices have sometimes been useful, but blisters were always more efficacious. I have never used the actual cautery, though I should be tempted to employ it in some cases. The action of counter-irritants might be explained in two ways: they certainly lead to increased respiratory movements for a time, and if repeated may effect a continuous beneficial effect of this kind; in the second place it is not impossible that they affect the circulation in the lungs. Caton, in a discussion some years ago before the Pathological Association at Oxford, claimed to have demonstrated that counter-irritation of the skin of the chest affects the pulmonary arterioles profoundly. This claim of course requires confirmation, but there is abundant clinical evidence of a reliable kind to show that external counter-irritation influences deep-seated structures or organs. Most probably such influence is exerted by reflex action through the nervous system.

Next to counter-irritation I should rank systematic breathing exercises, either in the form of deep inspirations and expirations, or of exercises with bottles after the method suggested by James for the treatment after evacuation of cases of empyema. Adequate breathing would perhaps properly rank as the most important requisite for speedy resolution, but in cases of marked consolidation has disadvantages, such as the tendency to exhaust the patient, and the lack of expansion of the affected side rendering the breathing useless. In cases, however, of moderate consolidation or persistent bronchovesicular breathing after pneumonia, I should rely upon breathing exercises rather than counter-irritation. In one case under my care, in a young man of about nineteen or

twenty, recovery from the active manifestations of the disease occurred normally, but for some time there was persistent semi-bronchial breathing with some dulness. He was directed to exercise his respiratory muscles twice daily, and soon began to improve. His chest expansion increased greatly, but he did not recover completely for a year. Pleural thickening may have had some part in the behavior of this case, but I could never assure myself of its existence.

In one of the cases reported I employed a rather unusual form of treatment, first suggested by Fochier (*Lyon Médical*, Aug. 23, 1891). This observer, noting that the occurrence of local suppuration in puerperal fever is often followed by improvement, suggested that artificially induced suppuration might benefit cases of puerperal sepsis. He practised injections of turpentine (about one centigramme per dose), giving three or four injections in different places. Following a suggestion of Fochier that the same form of treatment might be of use in non-pyemic diseases like pneumonia, Lepine (*La Semaine Médicale*, Feb. 27, 1892) practised it in a case of pneumonia on the twelfth day when the patient was in a desperate condition. Recovery ensued and was seemingly largely the result of the treatment. Subsequently Dieulafoy, L. Bard, Gingeot and Raoul reported successful cases, while Rendu referred, in discussion of one of the papers, to three cases that terminated unsatisfactorily. Two of these, however, were moribund when the treatment was instituted, and the third was a bronchopneumonia and not croupous.

I have not myself employed this treatment in the class of cases in which it was recommended — that is, in pneumonias of severe character during the latter period of the process (gray hepatization) — and cannot speak of its usefulness in such cases. The instance above reported was one in which there was no immediate danger to life and no existing toxemia. Fochier advanced the theory that the artificial abscesses operate by "fixing" the toxic substances (*abscess of fixation*), but Chantemesse and others believe the beneficial effect to be somehow connected with an increase of phagocytic activity on the part of the leucocytes of the blood. Without entering into this matter I may call attention to the remarkable change in my case in the differential counts of the leucocytes before and after the injection of turpentine. The number of eosinophilous cells and of polymorphous forms was of particular interest. The rapid increase of the latter may furnish some ground for the assumption that an increased phagocytic activity is induced, but my own view would take a different form. I am conveinced that the phenomena of leucocytosis are largely the result of altered distribution of leucocytes and not of increased production. It has been demonstrated that in the process of hypoleucocytosis the white corpuscles became arrested in the capillaries of the lungs, liver, and other structures. Reversely it is likely that leucocytosis is partly at least the result of a liberation of leucocytes from various parts of the body. In such a case as I have reported it is not improbable that large numbers of polymorphous leucocytes remained within the pulmonary circulation until a more powerful chemotactic influence caused their liberation. It may be that the treatment is beneficial in this manner.

Briefly, my conclusions regarding the treatment of cases of pneumonia with a tendency to delay of resolution are:

1. In cases of slight tendency to delay of resolution manifested by moderate dulness and persistent broncho-vesicular breathing, systematic breathing exercises are of the greatest importance.

2. When considerable dulness persists, active counter-irritation should be practised and tonics and stimulants administered.

3. The production of aseptic abscesses may be useful. The cases in which this has been practised are too few to warrant absolute conclusions, and the treatment is too painful for general application.

THE CLIMATE OF ATLANTIC CITY AND ITS USEFULNESS IN DISEASE.

By William Edgar Darnall, A.B., M.D.,
Atlantic City, N. J.

Forty years ago, when the beautiful island on which Atlantic City is built was an arid waste of sand, Philadelphia physicians recognized the wonderful health-giving properties of the climate it possesses. At first an occasional patient courageously ventured to the place; later, as hotels went up, they came in greater numbers; at the present day the wide-spread fame of this resort draws health seekers from all parts of the world. Abundant evidence from most credible sources now exists as to its usefulness in many forms of disease. It will be my purpose in this paper to describe some of the local condi-

tions and causes that contribute to this remarkable climate.

From meteorological tables, geographical and other data, a general opinion can be formed as to the nature of the climate of a section and whether it is favorable or unfavorable to health. It will generally be found, however, that there are strictly local conditions which should enter into consideration in determining whether a given locality is or is not the best place to send a case.

"Climate is so dependent upon purely local conditions, pertaining often to only a limited area of territory, that it is impossible for any work based solely upon official data taken at fixed points to convey anything more than a generalization. These conditions can only be ascertained by a careful study of the localities claiming the patronage of the health seeker. The physician who prescribes climatic change for his patient on generalizations will benefit just about as large a proportion of them as if he filled his prescriptions for all his patients from the same bottle. The ideal health resort must have natural conditions on which to build."*

Geographically Atlantic City is situated on an island just off the coast of New Jersey, lying in latitude 39° 22′. This island, about three-quarters of a mile in width, and ten miles in length, is completely surrounded by salt water—a point to be borne in mind. From its magnificent stretch of ocean-swept beach, an arm of water known as "The Thoroughfare" is sent around it, dividing it from the mainland. Beyond this, extending shoreward, there is a five-mile expanse of salt meadow land.

The coast of New Jersey has a general direction from southwest to northeast, but the beach front of the island trends more to the west, thus causing it to face almost to the south. It is possible that this may be one of the factors accounting for some of the characteristics of its climate which are not possessed even by other Jersey resorts.

The soil is porous and sandy. Water therefore soon soaks through it, leaving no standing pools. Even the natural atmospheric moisture seems to be absorbed by the dry sand. The growth on such a soil is necessarily scant, preventing the possibility of disease which lurks in decayed vegetation.

It seems to be a common impression that the air at the seacoast, especially during the winter months, must necessarily be heavy and damp. This is not so by any means. One of the most distinctive features of the climate of Atlantic City is the dryness and bracing quality of the atmosphere. There are of course occasional mists and foggy days; but by far the greater part of the time the air is dry, producing a feeling of buoyancy, as if it were wafted from mountain heights. Taking even all the misty days we have into consideration, reference to the accompanying charts will show a mean humidity extending over three years of but eighty-one per cent., while in past years it has frequently fallen below this figure.

MONTHLY MEAN PRESSURE.

Year.	Jan.	Feb.	Mar.	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1891...	30.01	30.06	30.04	29.98	29.99	29.93	29.99	29.96	30.12	30.03	30.14	30.16	30.04
1892...	30.01	30.09	29.98	30.04	29.95	29.97	30.03	29.97	30.13	29.98	30.03	30.03	30.02
1893...	29.94	30.09	30.02	30.01	29.87	29.90	29.93	29.93	30.00	30.07	30.08	30.10	30.00

MEAN MAXIMUM TEMPERATURE.

Year.	Jan.	Feb.	Mar.	April	May.	June.	July.	Aug.	Sept.	Oct.	Nov	Dec.	Annual
1891...	40.5	45.0	42.4	55.5	62.8	72.6	73.5	76.8	75.1	61.1	50.3	48.5	58.7
1892...	38.6	40.5	41.8	53.3	63.9	73.9	78.8	79.1	71 9	63.1	49.9	38.2	57.6
1893...	29.8	38.1	43.4	53.2	62.7	72.4	78.8	77.4	70 7	62.8	51.4	44 4	57.0

MEAN MINIMUM TEMPERATURE.

Year.	Jan.	Feb.	Mar.	April	May.	June.	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1891...	30.1	32.5	31.5	42.5	50.4	59.5	64.1	67.1	62.8	48.1	36.8	34.5	46.7
1892...	26.5	30.3	28.3	39.7	50.6	62.8	64.3	68.0	59.2	46.8	38.1	25.9	45 0
1893...	16.0	26.0	30.6	41.3	50.1	61.2	66.2	66.5	58.6	50.5	38.7	31.2	44.7

MEAN PERCENTAGE OF HUMIDITY.

Year.	Jan.	Feb	Mar.	April	May.	June.	July.	Aug.	Sept	Oct.	Nov.	Dec.	Annual
1891...	84	82	78	75	78	82	84	84	82	79	80	78	80
1892...	81	82	82	78	81	88	84	80	76	74	81	81	80
1893...	85	78	82	88	84	88	86	84	78	86	80	82	83

ANNUAL PRECIPITATION.

STATIONS.	YEAR.		
	1894.	1895.	1896.
Atlantic City, N. J.	33.21	28.76	30.90
Boston, Mass.	36.62	40.17	37.55
Cape May, N. J.	36.24	27.23	34.79
Charleston, S. C.	56.81	55.18	47.78
Galveston, Tex.	40.64	38.91	23.71
Jacksonville, Fla.	56.84	46.80	40.19
New Orleans, La	54.44	56.44	49.68
New York City, N. Y.	44.17	35.73	37.99
Norfolk, Va.	53.09	45.41	44.22
Portland, Me.	37.13	38.78	45.44
Savannah, Ga.	52.80	54.84	44.24
Wilmington, N. C.	45.18	46.27	40.42
Asheville, N. C	34.25	36.81	37.84
Philadelphia, Pa.	40.34	31.01	32 15

The dryness of the climate is, however, best shown by an examination of the rain-

* This paragraph by Dr. A. F. McKay (*Medical Record*, Oct. 31, 1897) is so much to the point that I have quoted it bodily.

fall. This will average about two and a half inches per month, or thirty inches annually. These figures are in striking contrast to those of other points along the coast. At none of them does the rainfall approach so low a point, and at many it will be seen that the annual precipitation is from fifty to sixty inches.

The question of temperature is always an important one in the study of any climate. It has gotten to be a saying among weather observers that Atlantic City breaks all rules of meteorological calculation in this regard. Severe extremes of temperature are unknown here. Even in the coldest winter weather the middle of the day is usually pleasant, the temperature at noon rarely being below 40°. As this is the most convenient time for invalids to be out, it is fortunate that it is rarely cold enough to be disagreeable to them.

On the coldest day of last winter (January 27, 1897) Atlantic City showed the highest temperature of any Eastern city, and the same average temperature for the day as New Orleans. On the other hand, during the most intense heat of July and August the thermometer seldom registered above 85°, while the average temperature at this time of the year is 71.5°.

The tables show a mean maximum temperature for three years of 57.7°, a mean minimum of only 45.5°, or an average annual temperature of 51.6°. A daily comparison will show that it is six to ten degrees warmer here in winter than in Philadelphia, and that much cooler in summer.

There are several factors to be mentioned in accounting for this remarkable record, most important of which are: the winds; the geographical position of Atlantic City, which has been described; and the Gulf Stream. During the winter months the prevailing direction of the winds is from the west and northwest. These winds come to us across sixty miles of the sandy soil of New Jersey. They are not only warmed by the radiation of heat from it, but the sand absorbs their moisture and dries them. If the winds, on the other hand, are from the south, southeast, or east, they become heated as they pass over some three hundred miles of Gulf Stream. This leaves the northeasters as the only disagreeable winds we have. Blowing down between the Gulf Stream and the coast they have no modifying influence. These, however, are of rare occurrence, and do not last longer than a day or two at a time.

PREVAILING WIND DIRECTION.

Year.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.	Annual.
1891	NW	NW	NE	SW	S	S	S	S	SE	NW	NW	SW	NW
1892	NW	NE	NW	SW	SW	SW	SW	SW	E	W	NW	N	SW
1893	NW	NW	NE	SW	SW	SW	SW	SW	SW	E	NW	SW	SW

AVERAGE HOURLY WIND VELOCITY.

Year.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.	Annual.
1891	13 6	12.8	15.4	12.4	12.8	10.6	10.4	9.1	9.0	14.5	12.7	12.4	12.1
1892	13 7	16.2	15.0	12.1	12 1	11.5	8.9	8.6	10.5	11.4	12.9	10.5	12.0
1893	11.9	14.3	13.7	12.8	11.1	10.4	9.2	10.5	10.7	10.7	12 5	13.0	11.7

NUMBER OF CLEAR, PARTLY CLOUDY, AND CLOUDY DAYS.

Year.		Jan	Feb.	March.	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec	Annual.
1891	Clear	11	11	11	15	11	19	10	9	17	13	12	15	154
	Partly Cloudy	12	6	7	10	9	5	14	13	11	9	10	7	113
	Cloudy	8	11	13	5	11	6	7	9	2	9	8	9	98
1892	Clear	11	8	10	10	9	11	7	11	14	12	10	11	124
	Partly Cloudy	7	6	8	11	13	14	10	12	13	17	8	8	136
	Cloudy	13	15	13	9	9	5	5	8	3	2	12	12	106
1893	Clear	9	8	9	7	14	10	15	19	13	12	7	11	134
	Partly Cloudy	15	7	9	13	11	14	15	8	11	11	8	10	132
	Cloudy	7	13	13	10	6	6	1	4	6	8	15	10	99

The nearness of such a large body of ocean water is itself an important agent in the modification of the climate. Sea water possesses a fairly constant temperature, which does not fluctuate much from winter to summer.

During the rigors of winter, when the earth and air are colder than the water, which remains constant, this fact causes the water to serve as a blanket by which the heat that would be lost from the soil by radiation is retained. Temperature is thus elevated in winter. In summer, however, the opposite effect is produced, for the atmosphere is now warmer than the water, and when everything is roasting inland the temperature is made refreshingly cool here by reason of the evaporation from the surface of so large a body of water, and the breezes wafted from it. In this way the climate is made more equable, and less subject to extreme or sudden changes of temperature either in winter or summer.

In the consideration of a place to which patients may be referred for their health, it is highly necessary that a locality be chosen which has a majority of its days bright and sunny. Dark days depress the invalid and deprive him of the sun, besides shutting him in the house, so that he also loses the benefit derived from outdoor exercise. A casual reference to the statistics disproves the com-

mon impression that life by the sea must be bleak and dreary. It is safe to say that there are at least 265 days in the year on which an invalid could be out enjoying the delights of the famous Board-walk. This leaves but 27.5 per cent. of the days—a little more than one-fourth—on which the sun hides his face entirely. Quite a percentage of these occur in March, the disagreeable month everywhere, and such weather is usually of very short duration. Most of the time the weather is bright and sunny, the air bracing and exhilarating, and the winds tempered with a softness that is surprising; while during the autumn months no wealth of words can paint the glory of the sea and climate.

Undoubtedly the most important modifier of the climate of all the Atlantic States is the wonderful influence of the Gulf Stream, which bears a peculiar relation to the coast opposite Atlantic City. It has been determined by the United States Geodetic Survey that there is a mutual relation between the moisture, temperature and barometric pressure on land and the varying velocities and different positions of the currents of the Gulf Stream. The surface velocity, according to Pilsbury, is sensibly affected by barometric differences, forming low and high areas of pressure. These currents have also daily, monthly and yearly variations in position, and each motion is no doubt governed by laws that are as yet but dimly understood. The Gulf Stream follows the declination of the moon like a needle does a magnet. Its axis moves from west to east as the moon proceeds from high declination to low, and crosses the equator. Its volume expands and contracts. Even its temperature, which is about 80°, presents variations within narrow limits.

The conclusions adopted by Professor Bache from the observations taken under his direction were as follows: "That between Cape Florida and New York the Gulf Stream is divided into several bands of higher and lower temperature, of which the axis (of the stream) is the warmest, the temperature falling rapidly inshore and more slowly outside. This is not only the case at the surface, but with modifications easily understood at considerable depths. That between the coast and the stream there is a fall in temperature so abrupt that it has been aptly called the *cold wall*. The cold wall extends with varying dimensions and changes of its peculiar features along the coast from Cape Florida, northward as far as examined. Inside this wall of colder temperature there is another increase, while outside the warmest band, which is next the cold wall, there is another warm and one other cold band."

The innermost of these warm bands approaches as near as sixty-five miles from the coast, opposite Atlantic City. Not only its proximity to us here must be noticed, but also its course. At this point it takes a bend running a little more than a half degree of latitude to the northeast, then bending due east in latitude 40°. A certain outlying portion of Gulf Stream water, therefore, setting in the direction of this current will, when it makes this sudden turn, continue the original direction of the current, being deflected as a tangent from the curve of the stream. The beach of Atlantic City with its southern exposure is situated just where it would receive with open embrace whatever modifying influences might be derived from such a current setting in this direction. What leads me to believe this fact has some bearing on the question is that no other seaside resort even along the Jersey coast possesses exactly the climate we have here.

It may be of some interest to digress here a little in order to describe briefly the two generally accepted scientific theories of the causes of the formation of this remarkable body of water known as the Gulf Stream. These are the (*a*) Wind Theory and the (*b*) Density Theory.

(*a*) The *Wind Theory*, of which Pilsbury is an advocate, supposes that any permanent wind blowing constantly in the same direction across a body of water will cause such friction between the surface particles and the lower strata of the air that these particles will tend to move with the wind; also the wind caught behind the crests of waves would push these along. The friction thus produced among the surface particles of water is transmitted from layer to layer, with continually diminishing force as the depth increases. It was calculated by Agassiz that 100,000 years was ample time to allow friction of this sort to be communicated from the surface to the bottom—a depth, say, of 2000 fathoms. It is held therefore that the trade winds blowing in the same direction for ages, over the Atlantic Ocean, have by this friction process, slow in itself yet attaining a mighty momentum as the centuries have rolled on, been able to move this vast body of water along in a constant stream.

(*b*) The advocates of the *Density Theory* hold that ocean currents owe their origin to the difference between the specific gravity of

sea water at one place and sea water at another place; whether this be due to difference of saltness, temperature or what-not, it disturbs equilibrium so that currents result.

The effect of heat, as at the equator, causes a lesser density of the surface water, while the effect of the cold of the polar regions causes a greater density. This latter being heavier sinks as it is cooled by reason of its greater specific gravity and diminished bulk, and sinking, causes a flow of water to be drawn into its basin from the surrounding surface area of water. Such a supply must come from a yet greater distance; and so this cooling causes a set of water in the direction of the poles, when a corresponding deep-down current of cold water sets toward the equator to be again heated.

Also precipitation over the central portion of the water hemisphere of the earth is greatly in excess of evaporation. Northwards evaporation is in excess of precipitation. The water thus drawn from polar seas by evaporation is quickly hurried down to the areas of low barometric pressure, where precipitation follows. But its loss from the polar regions makes the basin referred to above still larger, and so adds an additional impetus to the set of the water northward. The disturbance of equilibrium thus produced between equatorial and polar water, by cooling and evaporation, causes a steady current to flow from gulf to poles, and a return undercurrent from poles to the equator.

These are in brief the two most prominent among the many theories that have been advanced as to the formation of the Gulf Stream. It must be true that warm water comes from the equator and cold from the polar regions, and whatever be the mode of transfer the modification of climate is due to its presence rather than to the method of its delivery.

But to return to Atlantic City. After having studied the meteorological conditions and geographical environments that conduce to its unique climate, the practical question naturally arises, What is it good for? What classes of disease will receive benefit by a sojourn in such a climate? Climatology is a subject beset with many and peculiar difficulties. While a great and growing department of therapy, it is as yet but dimly understood by the bulk of the profession. Formerly climatic change was only thought of as a remedial agent in respiratory diseases. Now every chronic deviation from health is studied with reference to change. Such change, however, must not be recommended in a haphazard way. There must be some rational basis underlying it if any good is to be derived therefrom.

The climate of Atlantic City is a dry one, tonic and alterative in its qualities. Its air is both a stimulant and a sedative. Actual experience drawn from many sources has demonstrated that those suffering from almost all functional disturbances, nervous prostration, overwork of both mind and body, depression from any cause, indigestion, insomnia, or any torpid state of the system, as well as strumous conditions and diatheses, are much benefited by the bracing qualities of the air. Residence here has proven of inestimable value to that elderly class of cases whose health and strength seem to have forsaken them, making them chronic invalids. Long-lasting and obstinate diseases of women rebellious to treatment at home oftentimes show marked improvement or disappear entirely under the alterative influence of the air here.

There is a class of cases in the practise of nearly every physician whose management becomes very trying to his skill. These are the convalescents from severe and exhausting diseases or operations who seem to reach a standstill. They remain without improvement of vitality or appetite till the patience of the family becomes exhausted, while the physician pursues resource clear to the end of his string without avail. Such cases usually have an appetite before they have been here twenty-four hours; they seem to improve almost as they cross the meadows. As soon as they come under the influence of the stimulating air oxidation is increased. Its soporific effect is at the same time a sedative to a disordered nervous system. Its purity and freedom from unsanitary conditions and miasmatic influences allows more rapid elimination of deleterious matter from the system.

On the other hand, the softness of the air and its balmy warmth soothes the stiffened joints of the gouty and rheumatic; relieves the distress of emphysema and asthma, especially those cases coming from inland or from high altitudes. There are some asthmatics, however, whose difficulties are aggravated by coming here. These should seek the warmer, more sedative climate of the far South. The cases that do not do well at the seashore will oftentimes be relieved by the mountains, and *vice versa*.

Whether due to the antiseptic and alterative qualities of the atmosphere, or to the absence

of the pollen of vegetation, sufferers from hay-fever enjoy comparative immunity from their malady. Atlantic City has been referred to as a "hay-fever paradise!" Most noteworthy perhaps and most striking is the number of people living here who have been cured of chronic bronchial and catarrhal affections. This is no doubt brought about by the alterative influence of iodine, bromine, chlorine, oxygen, and the ammonia salts, with which every inspiration they breathe is laden. At the same time it must be remembered that the air is pure and free from the dust of a city, factory smoke, exhalations from slum districts, and other impurities that serve to keep up an irritation once started in the respiratory tract.

Skin diseases are not common here. They are often mitigated or disappear entirely, for the atmosphere, while dry, is not irritating to the skin like that of high climates.

The profession formerly held that high altitudes were better adapted to beginning cases of phthisis. The trend of opinion, however, now seems to be that neither wind, humidity nor altitude in themselves and apart from other factors play so important a part as do the purity of the air, its percentage of free ozone, and the absence of unsanitary conditions. Cold, humid winds chill the surface of the skin by conducting away its heat, and drive the blood inward. It is easy to see that this does an already inflamed lung no good. Such weather should always be avoided therefore by a consumptive. Raw or penetrating days will occur at times in every climate. Atlantic City, however, has a very small percentage of such days, and they soon give way to sunny weather again.

Much may be said in favor of this place as a resort for tubercular patients. Not a small advantage is its proximity to the large centers of population. Long journeys from home are always depressing to invalids. The best results may often be obtained by sending the sick one to a place near enough to his home for him to enjoy the comforts of friends, and where the change will not be too radical.

The following points have been enumerated as reasons why the well known climates of New Mexico and Southern California are model ones for phthisis, viz.: (1) A dry, aseptic atmosphere; (2) a maximum of sunshine and a minimum of cloud; (3) a slight variation of temperature between extremes of heat and cold; (4) a minimum likelihood of sudden changes of temperature; (5) a light, porous soil.

If what has been said in this climatic study has been carefully followed and the tables examined, it will be easily seen that Atlantic City meets these requirements adequately in each case, and her climate stands as the peer of any resort for phthisical patients. In the earlier stages of the disease, when it is threatening rather than in actual progress, or if the area of diseased tissue is small, not progressive, no wasting nor hectic of importance, and digestion is good, it may be recommended with confidence. This climate is especially good where tuberculosis has resulted as a part of a general breakdown from overwork, and where excavation is not rapidly extending.

Cases of fibroid phthisis, or phthisis associated with catarrhal or laryngeal trouble, much nervous irritability, emphysema, bronchitis, bronchiectasis, organic heart disease, or any brain or spinal affection, and in other conditions where high altitude is directly contraindicated, will usually receive much benefit here. Even in advanced cases with double cavities, degenerative diseases of the blood-vessels, ulceration of the intestines or albuminuria, temporary improvement may often take place. It is only temporary, however. The death warrant of such patients has already been written. Their best place is home, where their latter days may be made comfortable and their end be among friends. If they insist on climatic change the warm and sunny South is better for them and may prolong their lives a short time. The air here is too stimulating for this class of cases.

In conclusion, I wish to make acknowledgments to Prof. Willis L. Moore, chief of the United States Weather Bureau, for the tabulated statistics he has so kindly furnished me, and to the United States Geodetic Survey for the report of the investigations of the Gulf Stream.

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DANGER OF INJURY TO THE HEART IN THE TAPPING OF THE PERICARDIUM FOR THE RELIEF OF PERICARDIAL EFFUSION.

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The importance of giving relief to patients suffering from cardiac and respiratory distress as a result of an accumulation of fluid in the pericardial sac renders it advisable for us to

consider the best means to this end. Every physician of large experience finds it necessary from time to time to aspirate fluid from the pleural cavities to relieve the patient of the symptoms arising from interference with respiration, or from the peritoneal cavity to relieve distress due to distention and pressure. Very few of us, however, resort to such means of relief when we believe that a pericardial effusion of dangerous extent impairs the efficiency of the heart; first, because the diagnosis of pericardial effusion from cardiac dilatation and enlargement is difficult, and second, because the fear exists that the heart may be wounded. This fear of a cardiac wound is the cause of the timidity, for many have the idea that a cardiac wound means death and therefore hesitate lest the immediate result of the operation be fatal. My object in this paper is to point out the fact that wounds of the heart *per se* are not necessarily followed by serious results; that paracentesis pericardii should be performed oftener than it is; and that the physician in charge of cases of infectious disease, whether they be pneumonic, tubercular, or rheumatic, should remember that pericarditis with effusion often develops insidiously and is responsible for many signs of cardiac embarrassment and death which are erroneously considered to be due to heart clot or degenerative processes in the myocardium. While recognizing the great difficulties in differentiating between pericardial effusion and pericardial thickening, hypertrophy, dilatation and displacement of the heart, these will not be considered in this paper. They will be found well discussed in Dr. Frederick C. Shattuck's paper which was read before the Association of American Physicians in May, 1897. From this and many other papers it is evident that life can be saved by tapping the pericardium in a certain proportion of cases in which an effusion exists, and to those who are particularly interested in this subject we may mention three other notable papers on the methods of tapping the pericardial sac, namely, the exhaustive paper of Dr. John B. Roberts, published some years ago, and two others read this year at the meeting of the American Surgical Association by Porter of Boston and Roberts of Philadelphia (*American Journal of the Medical Sciences*, December, 1897), the latter gentleman thus making his second contribution to the subject. These papers also prove the usefulness of this mode of obtaining relief in pericardial effusions.

We pass on, then, to a consideration of the question as to the danger of heart wounds. An examination of the literature shows that injuries to the heart are by no means necessarily fatal, and that when death is produced by a wound of the heart muscle, death often does not ensue as rapidly as if it were a wound of a large blood-vessel. An illustrative case of this character is one recorded by Cristiani in *Lo Sperimentale* for March, 1889: A man aged twenty-five was stabbed, in a brawl, in several places. One wound was in the fifth interspace on the left side, near the anterior axillary line. There was a second wound in the eighth interspace on the same side, extending from the posterior border of the axilla toward the shoulder blade. There was also a stab of the left hip and several stabs on the right arm. After the second wound was received—the one near the præcordia—the man fell, but retained consciousness. After being taken home he was seen by a physician, who found him still conscious, with respirations at fifty a minute and pressing dyspnea. This state lasted for eight or ten days. The wound over the heart healed in seven days, and that in the eighth interspace in eight days. On the eighteenth day the patient got up, though still weak, and on the thirty-seventh day, while yet feeling ill, he walked to Pisa and back—a distance of six miles and a quarter. This was done in the morning; in the afternoon of the same day he walked nearly two miles, climbed a tree after a bird's nest, and fell to the ground, dying ten minutes later.

At the autopsy it was found that the wound in the fifth interspace had penetrated the pericardium and deeply wounded the wall of the left ventricle at a distance of three and a half centimeters from the apex, but had not actually entered the ventricle. The mouth of this wound was filled with a soft clot, which was removed, and a mass of organized blood-clot was found below it. This mass had ruptured by reason of the increased strain, so that there was an opening into the ventricle through which the fatal hemorrhage took place into the pericardium.

In the same article is a report by Messeri, of Florence, relating the case of a man thirty years old, who was stabbed in the fourth interspace a half inch to the left of the sternum. When admitted to the hospital he was apparently dying, but he soon recovered, and his wound healed rapidly. Twenty-one days later he asked to be discharged, and when this was refused fell into a rage and

dropped dead almost at once, with cyanosis and dyspnea as prominent symptoms. The thorax contained much blood, and an open wound was found in the right ventricle near the sulcus, and also a wound of the septum. Messeri also refers to statistics collected by Zanetti, who finds that in one hundred and fifty-nine cases of wound of the heart, in only ten was the septum injured; and that in seven of these death occurred at once, in one it took place in an hour and a quarter, in another in two hours, while the other patient lived twenty days.

Having recently had occasion to look into this matter myself, I have found in medical literature a number of cases recorded where similar survival after severe injury occurred. Thus, Fischer has collected four hundred and fifty-two cases of injury to the heart and pericardium, in no less than seventy-two of which the patients recovered, while in two hundred and seventy-six death took place at periods varying from one hour to nine months. Death was immediate in one hundred and four cases. Of the seventy-two recoveries, examinations, made long after, in thirty-six of the cases proved the diagnosis to be absolutely correct. Of these seventy-two cases, ten were punctured wounds, forty-three incised, twelve gunshot, and seven lacerated; fifty were wounds of the heart, and twenty-two of the pericardium.

Purple also records forty-two cases of wounds of the heart in which death did not come on immediately. Randall records a case of a colored boy who lived sixty-seven days with a number of shot in the heart muscle, and Ferrus a case in which the patient lived twenty-one days with the heart transfixed with a skewer.

Ollivier and Lawson have collected twenty-nine instances of penetrating heart wounds, of which only two proved fatal within forty-eight hours; the rest of the subjects died in from four to twenty-eight days after receiving the injury. The Duc de Berri lived eight hours after a wound of the left ventricle; and Watson saw a case in which a man ran eighteen yards after receiving such a wound. Those who are interested as to further discussion of this subject I may refer to the paper of Mesbrenier in the *Annals d'Hygiene*, 1879, vol. i, p. 257.

Still more recently we find Morgan in the *Edinburgh Medical Journal* for December, 1897, recording the case of a boy aged five years who fell upon a needle so placed in his shirt that the fall forced the steel into the heart so that it moved to and fro synchronously with the heart. The child was chloroformed and the needle withdrawn, recovery taking place.

Another case is that reported by Prior in *The Lancet* of October 9, 1897, of a man aged forty-three years, an epileptic in an asylum. The attendant in charge in the sick-room observed the patient doing something unusual, and on removing the bedclothes was astonished to find an iron pin projecting from the chest in the region of the heart. The exact situation was one and three-fourths inches below and one inch internal to the left nipple. The pin was directed slightly upwards and inwards. It moved vigorously with every beat of the heart and traveled about an inch upwards and downwards every time. On examination the pin was felt to be firmly embedded in the wall of the heart, which was felt tugging at the inner end of the pin. Removal of this peculiar foreign body was not undertaken without some misgivings as to the result. The pin was rotated and gently withdrawn; the part within the chest measured three inches, making a total length of four inches of three-tenths inch iron wire. The patient was collapsed; he had a small, feeble pulse, 64 per minute; respiration was shallow, 24 per minute; and the skin was cold. There was practically no hemorrhage from the wound. No external hemorrhage appeared subsequently to this, and there were no signs of effusion of blood or serum into the pericardium. The patient kept his eyes closed. He did not resist an examination of the pupils, which were dilated and reacted but slightly to light. When spoken to he would not answer. Prior thought he was conscious of all that was said, and subsequent events made this almost certain. The wound was dressed antiseptically, and there was no visible suppuration at any time. On the day following the infliction of the wound there was some subcutaneous emphysema round the wound. The physical signs of pneumothorax appeared, but this and the emphysema disappeared again in twenty-four hours.

The following case of heart wound has been reported by Rehn: A young man was brought to hospital, having received an injury from a knife in the left side of the chest. There was much dyspnea and hemorrhage. As the pericardium became dilated the patient's state became worse and worse. The wound in the fourth intercostal space was then opened up, and after resection of the

fifth rib the pericardium was incised. A wound one and a half centimeters in length was then found in the right ventricle. This Dr. Rehn closed by three sutures and packed the pericardial cavity with iodoform gauze. After the operation the pulse and respiration immediately improved, and although the patient's convalescence was retarded by suppurative pleuritis he made in the end a complete recovery.

Finally, the following personal experience is of interest, although the results from the standpoint of relief of cardiac difficulty were not permanent. A boy nineteen years of age, during the course of a severe attack of articular rheumatism, developed great pain over the præcordium, and in the course of forty-eight hours marked interference with normal heart action, dyspnea, cyanosis, and great præcordial discomfort. He had had since early childhood severe attacks of rheumatism at varying intervals, and as a result of these attacks had developed a marked mitral regurgitant murmur. The symptoms of cardiac oppression increased in intensity, but a physical examination of the chest failed to reveal any trouble with the lungs, although there was a great increase in the area of præcordial dulness. Under these circumstances it was evident that the extension of cardiac dulness in every direction could only be due to two causes—either a pericardial effusion or marked cardiac dilatation. The symptoms increased in severity, and became so aggravated that it was evident the patient would die in a very short time if some active interference was not resorted to. Under these circumstances I asked my colleague, Dr. J. C. Wilson, to see the case with me in consultation, and we both decided that we were justified in resorting to paracentesis pericardii, with the hope that by withdrawing pericardial fluid we might relieve the labored action of the heart. After careful percussion and deliberate outlining of the areas of cardiac dulness, I inserted a trocar and cannula attached to an aspirating flask into the fifth interspace immediately to the left edge of the sternum. The impulse of the heart was immediately transmitted along the cannula as soon as it entered the chest, and on turning the stop-cock the aspirator withdrew several drachms of blood. This sign, combined with the active movements of the cannula, which was evidently engaged in the heart muscle, apparently indicated that the heart had been punctured, and fearing that serious results might follow the instrument was at once withdrawn. Instead of the patient becoming worse, however, he immediately improved and for a number of hours seemed much relieved, perhaps because by the withdrawal of the blood we had relieved auricular or ventricular distention and the wound closing had prevented hemorrhage into the pericardial sac. On the following day, the symptoms having returned in all their severity, it was determined to once more attempt to withdraw fluid from the pericardial sac, in which it seemed certain that fluid existed. Another attempt, however, was equally barren of results so far as fluid was concerned, the cardiac cavity being tapped a second time and pure blood withdrawn as before. This second wound of the heart also resulted in temporary amelioration of the case, the patient dying about thirty-six hours afterwards from a gradually increasing cardiac failure.

By far the most recent and important study of this question, however, has been made by Bode (*Beiträge zur Klinische Chirurgie*, Band xix, Heft 1). This research showed that large wounds of the ventricle which impaired its action soon resulted in death, for this reason, or because of hemorrhage into the pericardium; whereas in the case of small wounds of the ventricle the hemorrhage gradually ceased and finally stopped spontaneously, the time of repair or arrest of the hemorrhage being quite short. He also found that small wounds of the left ventricle bled much less freely than similar wounds in the other parts of the heart, evidently because of the greater muscular thickness of its walls which by the arrangement of its fibers mechanically prevents hemorrhage and aids clotting. That this protective process takes place is proved by the cases of temporary recovery followed by sudden death, when severe strain has displaced the plugging clot, which have been cited in this paper.

In a research carried out by the writer, the results of which were published in the *Medical and Surgical Reporter* in 1889, these last named facts were frequently noted, and a recent study of the hearts of the dogs used at that time shows very well that this plugging of a cardiac wound by a clot often occurs and thereby saves life. It also showed that an injury to the heart muscle, unless of great extent, did not of itself necessarily or even generally cause death, and that in a number of cases where death did result from a stab wound of the heart this result did not arise from the cardiac injury directly, but

either from the loss of blood through the wound in the pericardium and heart wall or much more commonly from the pressure exercised upon the surface of the heart by the accumulation of fluid in the pericardial sac. The conclusions to be reached, therefore, seem to be as follows so far as actual cardiac wounds are concerned: There are therefore several ways in which death may occur in cases of heart wounds: (*a*) By hemorrhage which results in loss of blood or great pericardial pressure from the cardiac cavities; (*b*) by hemorrhage from the heart muscle itself, which is unusually slight; (*c*) by a wound of the coronary artery; (*d*) by injury to the center which Kronecker and Schmey have localized in the dog's heart—a spot above the lower limit of the upper third of the ventricular septum, which, when it is injured, brings the heart to a standstill. This is the so-called coordinating center.

We may conclude therefore that the lethal result of a heart wound depends largely upon the rapidity with which a hemostatic clot is formed in the opening, and that injury of the heart muscle in itself is rarely the cause of death. Only when the coordinating centers are injured or there is profuse hemorrhage into the pericardial sac, which produces cardiac failure by pressure, does death occur, unless the wound is so large as to permit the blood to escape externally or into the thoracic cavity. The opening made by a small aspirating cannula is never large enough to produce hemorrhage from the ventricle.

Heart wounds heal by the formation of hemorrhagic exudate, which plugs the leading opening and permits repair.

THE POST-OPERATIVE TREATMENT OF SURGICAL CASES.

By Thos. Leidy Rhoads, M.D.,
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(*Continued from page 22.*)

When an operation is performed, as it frequently is, on patients who are suffering from an acute or chronic urethritis, the prolonged exposure of the patient on the table and the administration of required alcoholic stimulants will often light up an acute inflammatory process, which will result in complete obstruction to the urinary outflow—a condition known as retention from inflammatory stricture. Any part of the urethral tract may become sufficiently involved in this process to produce this complication, but the existence of inflammation in the deep urethra, a severe posterior urethritis, is the most fruitful cause of the trouble. The area of inflammation is not, however, always limited to the urethra itself, and combined with a specific urethritis there may be an associated acute or recurring prostatitis, from extension of the urethral infection to the prostate gland. In either case the retention is primarily purely mechanical; the inflammatory process becomes so marked, the urethral mucous membrane, or the prostate, or both, become so inflamed and swollen as to impinge upon the lumen of the urethra, and in a short time the vesical outlet is completely blocked. It must not be overlooked, however, that the element of spasm, from the involvement of the peripheral ends of the sensory nerves of the urethra in the inflammatory process, and the subsequent reflex disturbance, enters largely as a causal factor in the inhibition of the vesical function. The diagnosis of the exact condition causing the retention from that of a simple spasmodic trouble will be readily determined by inquiring into the recent history of the patient, the existence of a free discharge, the associated febrile disturbance, and the pain along the course of the urethra. Digital exploration of the rectum will determine the existence or non-existence of prostatic tenderness and swelling.

The treatment will consist of such means as are mild and gentle in character. If the character of the operation permit, the patient is placed in a hot general bath, or a hot sitz bath, for fifteen minutes, and is given a hot lemonade. In lieu of the general bath, or sitz bath, if these be not permissible, the patient may be wrapped in a blanket wrung out in hot water, or the local use of hot fomentations to the perineum and hypogastrium may be substituted. At the same time it is well to administer an initial dose of morphine and atropine by subcutaneous injection. This failing, the rectum is irrigated by means of a fountain syringe and rectal irrigating pipe having an opening for the return flow, with several quarts of hot saline solution, the nozzle of the tube being directed anteriorly against the prostate to get the full local effect on the congested gland and neighboring area. At the same time two or three leeches should be placed on the perineum if the prostate gland is much inflamed. These means still failing to relieve the retention after the lapse of two or three hours, a small soft-

rubber catheter is passed after a preliminary mild antiseptic irrigation of the anterior urethra. A No. 15 F Jacques' catheter having previously been sterilized in the Guyon box, or in emergency by boiling, is attached to an irrigating bottle containing half a liter of potassium permanganate solution 1:4000. The bottle is raised one meter above the patient, and while the solution continues to flow through the tube and catheter, the latter is introduced into the urethra until the eye of the instrument is opposite the bulb. The irrigation is here completed and washes out all the purulent contents from the anterior urethra. Occasionally, while this is being done, the parts become so relaxed that the patient will void his urine while the irrigation is in progress; but if not, the irrigating bottle and tube are disconnected and the catheter is passed into the bladder—usually without any great difficulty. Owing to the hypersensitiveness of the urethra from the inflammation that is present, the procedure may at times be accompanied by such unbearable pain as to require the induction of light anesthesia with ether or bromide of ethyl before the catheter is introduced. This is, however, necessary only in rare instances. The catheterization is repeated at intervals of four hours, providing the bladder does not empty itself spontaneously; but before catheterizing, the milder means mentioned should be tried each time faithfully, to see whether they will not suffice. At intervals suppositories of belladonna and opium are administered for their antiphlogistic and relaxing effects, and if the fever runs high and local tenderness is especially severe, rectal injections of ice-water will give relief. The bowels are opened freely by salines, the urine is rendered bland by copaiba and sandalwood oil, and the kidneys flushed with diluent drinks; a restricted diet, principally of milk, is strenuously adhered to, and the recumbent posture is maintained until the inflammation is controlled and there is no longer danger of retention.

When retention comes on as a consequence of organic stricture, a different phase of the problem presents itself. The patient, usually an adult male, having for some time previous to the operation experienced some difficulty in urination, marked by frequency in micturition, dribbling, the voiding of a small stream, and an associated gleety discharge, suddenly finds himself, at the completion of an operation, unable to pass his water. Here, too, as in the case of retention due to acute inflammatory engorgement of the urethral tract, the exposure and environments of the operation, the chilling effects of the anesthetic, and possibly the necessary administration of alcoholic stimulants, have much to do with precipitating the sudden obstruction to the outflow of urine. Organic stricture, being the cicatricial result of a chronic interstitial inflammation, is always accompanied by a certain degree of this inflammation, more especially in the mucous membrane immediately back of the stricture, where the pouching of the urethra as the stricture grows smaller, and the erosion of the mucous membrane from the decomposition of a few drops of retained urine, favor the rekindling of an active inflammatory process in the stricture band itself. Accordingly, when such pernicious influences are brought to bear upon this condition, an inflammation not only of the urethra posterior to the stricture and the tissues tributary to it may result, but also an inflammatory infiltration of the fibrous ring itself, with a tendency to obliteration of the entire lumen of the canal.

The strictures thus causing retention in the great majority of cases are situated in the bulbo-membranous portion of the urethra, are generally multiple, particularly if the primary cause be gonorrheal infection, and their elasticity or density is commensurate with the duration and degree of the pathological process. This can, to a certain extent, be determined from the history previously elicited from the patient.

The treatment of the condition will begin immediately the retention is discovered. If there are no contraindications, the patient is placed in a hot general bath or a sitz bath; or, towels are wrung out in hot water and wrapped about his thighs and loins, the bed being properly protected. At the same time he is given a full dose of morphine sulphate (one-third grain) hypodermically or by suppository, or the same amount of the acetate by mouth. If the bladder is unable to expel its contents immediately after the bath or hot applications, instrumentation will be indicated. These strictures are necessarily impenetrable to soft catheters, sounds, and cutting instruments alike, and the instrument of choice for the relief of the condition will be the whalebone filiform bougie. The attempt at passing a catheter or sound is absolutely contraindicated, as it will only tend to increase the difficulty in relieving the bladder by the added urethral spasm which such an unsuccessful maneuver would induce. The filiforms should be thin and strong, those

usually purchased in the shops being entirely too thick to render the best service, and it is advisable in preparing them to scrape them with some sharp instrument in order to make a slender neck with a small olive point, the best size instruments being such as will permit the passing of the smallest size Gouley catheter. A dozen filiforms are sterilized, as were the soft instruments, by trioxymethylene in the metal box, after they have received the preliminary scrubbing with soap and water, and are soaked in bichloride solution 1:1000. The region about the fossa navicularis is disinfected as before. If there is any urethral discharge, the urethra is first flushed anterior to the stricture with hot boric acid solution fifteen grains to the ounce, or potassium permanganate solution 1:5000, by means of an irrigating bag and a short urethral nozzle. With a cleansed piston syringe, a drachm of the sterile lubricant is injected into the urethra and a filiform is passed down to the stricture. If after patient and gentle effort it refuses to pass the stricture, another is passed alongside the first, is likewise rotated and pushed, and still another until the shelving band is completely occupied with filiforms, and by successive efforts one is finally pushed through the opening. All organic strictures are permeable to filiforms, and painstaking effort will surely find the minutest opening. It is impossible to state definitely just what number of filiforms will be required before this is accomplished, but the average number found necessary in the writer's hands is about eight. The moment the instrument passes the stricture, the condition is conquered, and the remaining filiforms are withdrawn.

All will now depend upon the condition of the patient, and the character of the stricture, whether the bladder shall be emptied at once or whether the filiform is to be tied *in situ* and the urine allowed to trickle slowly by the instrument. If the patient has undergone a severe operation and is very weak, or if the stricture be highly resilient, no further effort is made, capillary drainage being depended upon to relieve the retention. If, however, the patient's strength permit, and the stricture be elastic, the smallest size Gouley metal catheter, which has been sterilized by boiling, is threaded over the filiform until it meets the stricture, when the filiform is slightly withdrawn, and *both* instruments are pushed into the bladder together. The metal instrument is withdrawn, and the two larger Gouley catheters are successively passed in a similar manner, immediately followed by a Jacques' catheter, by which the bladder is completely emptied. If for various reasons the deep stricture is not considered amenable to further dilatation at once, the rubber catheter is tied in for three days, urethral irrigation alongside the instrument from a high pressure (nine feet) being practised daily, after which the various methods for curing the stricture are made use of. If, however, moderate dilatation can be carried out at once upon the withdrawal of the soft-rubber instrument, several flexible loaded bougies, as advocated by Professor Hearn, are introduced in ascending sizes until the stricture is dilated to No. 18 of the French scale, which will prevent any further danger of retention for the time being and will pave the way for gradual dilatation with steel instruments during the course of the convalescence.

If the resiliency of the stricture prevents passing the Gouley instrument at once, or the weakness of the patient demands temporizing measures, the filiform is tied in and allowed to remain for twenty-four hours. The first drachm of urine passed in this way from the distended viscus will give untold relief to the patient, and he will rest in comparative comfort as drop after drop is drained off and the tension of the bladder is relieved. At the end of the first day it is usually possible to pass the Gouley catheter over the filiform, even though the stricture be very resilient. If the density of the band makes the passage of the metal instrument difficult or impossible, the filiform is allowed to remain in the urethra for several days longer, daily urethral irrigations and the internal administration of boric acid and salol in ten-grain doses preventing the occurrence of any septic process; and when the progress of recovery has so far advanced that the shock and depression of the original operation will no longer be considered a menace to further interference, suitable means are instituted for the relief of the stricture itself according to the indications of the case — in general, internal urethrotomy if the fibrous stricture be anterior to the bulb, external urethrotomy (Syme's operation) if it be behind the bulb and permeable to the grooved or tunneled staff, perineal section if it be impermeable to the guide.

Occasionally retention is met with after operation in patients who suffer from stricture resulting from a former severe injury to the perineum, and it will be most difficult, and at times impossible, to pass even the

smallest filiform through the hard, nodular, cartilaginous band, which is now essentially a traumatic stricture. It devolves upon the surgeon, however, to relieve the distended viscus without delay, and the cardinal resort will be found in suprapubic aspiration. The region above the pubes is shaved and disinfected, the distended bladder is outlined by percussion and palpation with cleansed hands, a puncture is made in the skin in the median line an inch above the symphysis pubis, and a sterile, medium-size aspirating needle is plunged directly backward through this puncture into the bladder—entrance into its cavity being indicated by the lessened resistance to the instrument. The bladder is emptied as completely as possible and the needle is withdrawn quickly so as to prevent the urine from escaping into the path of the needle and causing infection, the punctured wound in the skin being sealed with sterile cotton and collodion. When an aspirating apparatus is not at hand, a small sterile trocar will answer the purpose, a large-sized instrument being avoided, as there is too much danger from leakage of urine into the prevesical fat, with the consequent formation of an abscess. In the absence of either of these appliances, perineal section will be performed, making use of the staff devised by Professor Horwitz, which instrument is brought into contact with the stricture, and with a filiform as a guide will determine the exact point for the incision; a silver or soft-rubber catheter is then passed into the bladder and tied in position for three or four days, after which bougies will be used; or if complications exist which prevent the use of the staff, and there is great urgency from the retention, Cock's operation of tapping the urethra at the apex of the prostate behind the stricture will be indicated, and a drainage tube temporarily fastened in the perineal wound, the stricture itself receiving attention in due time.

After any of these operative methods, and before they are practised if possible, the internal administration of boric acid and salol, combined with the frequent local irrigations with mild antiseptic solutions, will be most efficient means of preventing urethral fever by rendering the urine antiseptic and keeping the urinary outlet sweet and clean.

Should retention come on later in the course of recovery, or during convalescence, from the closure of a slowly contracting or recurring stricture, the condition will be met with the same means as set forth above.

Retention of urine from organic stricture in women after operation is such a rare occurrence that it does not call for a detailed line of treatment at this time. Unlike the spasmodic retention which occurs so frequently in women after operation and which is easily relieved by the sterile glass catheter when milder means fail, the cases are exceptional in which the urethral caliber is so encroached upon by fibrous contraction as to seriously interfere with the function of micturition. When the condition does occur, the insertion of a filiform, followed by dilatation with short, straight steel sounds, or if resilient, by use of the urethrotome, will not only relieve the retention, but will usually prevent further recurrence from this cause.

(To be concluded.)

PRIMARY TUBERCULOSIS OF THE RECTUM, WITH REPORT OF CASES.

STRAUS publishes an interesting article on this subject in *Mathews' Quarterly Medical Journal* for January, 1898. He reaches the following conclusions:

1. That primary tuberculosis of the rectum is not so infrequent as some of the leading authorities have taught.

2. That it is a surgical disease as much as is appendicitis.

3. That it is not and cannot be diagnosed by the clinical symptoms as given by the various writers on diseases of the rectum.

4. That the only scientific and correct way of making a diagnosis is by the use of the microscope.

5. That by thorough curettement or excision, or both together, with cautery, it is not only cured but remains cured much more often than is dreamed of; certainly more often than the teaching of the authorities would have us believe.

6. That some of the apparently most hopeless cases are cured by repeated operations.

7. That all suspicious cases should be submitted for microscopical examination, for the reason that it is the only scientific method of reaching a diagnosis.

8. That local treatment is not equal to curing these cases; permanent results are to be had by a radical destruction of diseased tissue or the habitat of the tubercle bacilli.

9. That these cases are and have been cured, and that sufficient time has elapsed for us to conclude that they will remain cured.

10. That early and repeated operations if need be are imperative, if these cases are to be permanently cured.

The Therapeutic Gazette

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Leading Articles.

THE USE OF HYPODERMIC INJECTIONS OF SALT SOLUTIONS IN UREMIC ECLAMPSIA.

During the past eighteen months the THERAPEUTIC GAZETTE has contained on a number of occasions original, editorial and progress items dealing with this and kindred subjects. With practically no exceptions the reports made by English, European and American physicians in regard to the results produced by hypodermoclysis have been most favorable, particularly when we take into consideration that many of the conditions calling for this plan of treatment are exceedingly grave and followed ordinarily in the great majority of instances by death. It is not to be supposed that the hypodermic injection of salt solution in any quantity can cause kidneys hopelessly diseased to carry out their normal functions, nor that it can overcome the results of profound septic poisoning; but it is a fact that in a certain proportion of cases this method of treatment so aids the ordinary emunctories of the body, partially or temporarily disabled by disease, in carrying out their function with sufficient completeness as to permit recovery to take place. The possibility of applying this treatment to a large variety of diseases has not failed to impress itself upon the professional mind, and we now read of cases of puerperal sepsis, uremia, septic poisoning, and even instances of infectious diseases, such as scarlet fever, in which hypodermoclysis has brought about the most happy results.

In the *Australian Medical Gazette* of September 20, 1897, Surgeon-Major Eakins records a case of uremic eclampsia in which the patient, a primipara of twenty-eight years, recovered after treatment by the hypodermic injection of salt solution, although she was unconscious five days. When first seen she was in violent convulsions. After cleansing his hands and also the vulva and vagina of the patient with ethereal antiseptic soap, he easily dilated the cervix and extracted a dead male fetus by the feet, and this was followed by a live female infant which shortly afterward died. The thighs were now quickly cleansed with the same soap, a cannula inserted under the skin of the right thigh, and a pint of saline solution was allowed to flow in so that it was under the skin in about ten minutes. The cannula was then removed and introduced into the front of the left thigh and another pint given. Shortly after this Dr. Eakins administered one-third of a grain of pilocarpine hypodermically to aid in producing a sweat. The patient was wrapped in hot blankets and also received some digitalin and strychnine to prevent cardiac depression. A number of hours later, as no urine had been passed and catheterization proved the bladder to be empty, and the bowels had not acted, another pint of saline solution was given. Nourishment was also afforded her in the form of Mosquera beef jelly in solution. This was given by the rectum on a number of occasions. Four days after the patient was first seen she was able to take some milk and water by the mouth, but did not answer when spoken to, and passed but four ounces of urine. After this, however, she made a good recovery. Dr. Eakins believes, and we agree with him, that in the treatment of this case he took advantage of every means to save his patient: First, the administration of chloroform and her rapid delivery, thus emptying the uterus of its contents; second, allowing of free bleeding from the uterus, thus obviating blood-letting, which he believes is very useful either with or without hypodermoclysis; third, the diluting of the blood and its con-

tained poisons by the hypodermic injection of fluid on a number of occasions over and above those already mentioned; fourth, the promotion of elimination by the skin and bowels, and the use of warm water irrigation by the bowel to aid in producing a movement and to wash out poisons. Dr. Eakins concludes his article by emphasizing his firm belief that the hypodermic injection of saline fluid is much to be preferred to the intravenous method.

Another article by Dr. Bacon in the October number of *Medicine* also recommends the use of normal saline solutions in general obstetric practise, not only for the relief of toxemia producing eclampsia, but also in cases of postpartum hemorrhage or hemorrhage occurring at other times. If it seems inadvisable to use hypodermoclysis in a case of hemorrhage, the saline solution may be introduced into the body by intravenous injection, by injection into the peritoneal cavity, or, if the case is not pressing and slow absorption is desired, by high injections into the bowel, after the alimentary tract has been emptied of fecal matter by an ordinary enema.

Without doubt the best means of using saline solution in any one of these ways is by means of a hydrostatic or fountain syringe, or better still by the use of the ordinary glass irrigating apparatus commonly used for surgical practise. As the preparation of the normal salt solution requires a considerable amount of time and a careful measurement of the quantity of salt, we have recently suggested that a saturated solution containing normal saline ingredients, representing as nearly as possible the blood constituents, should be prepared, and this solution, by the proper addition of pure water which has been sterilized by boiling, can then be speedily employed.

THE USE OF PERMANGANATE OF POTASSIUM IN OPIUM POISONING.

The interesting contribution concerning the value of permanganate of potassium in opium poisoning which was made by Dr. Thornton and Dr. Holder in the last number of the THERAPEUTIC GAZETTE seems to us to settle once and for all the heretofore somewhat doubtful question as to whether the permanganate when given hypodermically exercises any true antidotal influence. Shortly after the suggestion was made that the permanganate of potassium should be given hypodermically in cases suffering from opium poisoning, we called attention in the editorial columns of the GAZETTE to the fact that on theoretical grounds such an administration of the remedy must be absolutely without value, except in so far that the pain of the injection might help to arouse the patient and by keeping him awake enable him to breathe voluntarily, even when the drug had so depressed his respiratory center as to seriously interfere with ordinary involuntary respiration. We pointed out at that time that permanganate of potassium is a substance which when it comes in contact with organic matter very rapidly changes, and that it was impossible for any of the drug, as the permanganate of potassium, to be absorbed into the blood-stream and to oxidize the morphine in the blood or tissues.

These theoretical objections are proved by this research to be correct. It is true that a study of contemporaneous medical literature will discover quite a large number of instances in which physicians have reported cases of opium poisoning which they believe to have been relieved by this form of hypodermic medication. A careful consideration of these reports, however, indicates in almost every instance there were good reasons for patients recovering aside from any effect which the permanganate might exercise. Thus we find in the London *Lancet* of October 30 the report of the case of a man aged thirty-five, who took two tablespoonfuls of laudanum by mistake for "black draught." When seen by the physician four hours after he had taken the poison he was asleep, but was readily aroused, and was given some strong coffee and a hypodermic injection of three grains of caffeine. Later on two more caffeine injections were administered. After this permanganate of potassium was used by the stomach, and to make a long story short, the patient speedily recovered. This is an instance, we think, in which the permanganate of potassium probably produced very little if any effect, and the caffeine was entirely responsible for the good results by reason of the stimulant effect upon the respiratory center. Further, the dose of laudanum was hardly large enough to be fatal in its effects. The temporary delay in the improvement in the man's condition after the first caffeine injection was due to the fact that the drug was not immediately absorbed, and we firmly believe that had no permanganate of potassium been administered in this case an equally rapid recovery would have been obtained.

THE PRODUCTION OF ANESTHESIA BY SCHLEICH'S MIXTURES.

The medical profession are now thoroughly familiar with the suggestions made some years ago by Schleich, that weak solutions of cocaine, morphine and sodium chloride should be used hypodermically for the production of local anesthesia prior to minor surgical operations, the advantages of this method being the avoidance of any danger from poisoning by cocaine or morphine, and the effectual benumbing of the sensory nerves in the part which is to be operated upon. Within the last few months Schleich has published the results of his studies upon the anesthetics which are commonly employed by inhalation for the purpose of preventing pain in surgical operations, and he has found that by mixing ether or chloroform with petroleum ether or benzine it is possible to modify some of their physical characteristics and also to alter in some degree their physiological action. The rapidity with which any drug can produce anesthesia by being inhaled is governed in part by its boiling or most rapid evaporation point. The higher this point the greater is its rapidity of action and the more prolonged its effects. Thus we find that in the case of chloroform, the evaporation point of which is 65° C., anesthesia speedily follows its administration in small amounts and lasts for some time. Once in the system it is eliminated slowly because the bodily heat is less than its point of most rapid evaporation. On the other hand, sulphuric ether boils at 34° C., and for this reason acts more slowly and more transiently, because for every breath of ether vapor which is inhaled an equal quantity is exhaled, since its evaporation point is less than that of the body.

Schleich has found that if chloroform, ether, and petroleum ether are mixed they form a fluid the evaporation point of which varies from 38° to 42°, according to the proportions of the ingredients. By the use of such a fluid for anesthetic purposes we avoid the over-effects of chloroform when used alone, the necessity of using excessive amounts of ether, and the patient speedily returns to consciousness after the inhalation ceases. Further, disagreeable after-effects are not so common or severe. These so-called mixtures of Schleich may be made in three ways. No. 1 is composed of:

℞ Chloroform, 45 parts;
Petroleum ether, 15 parts;
Sulphuric ether, 180 parts.

Its boiling point is 38° C., and as the lower the boiling point the more transient the anesthesia, it is to be employed in brief operative procedures of about twenty minutes' duration. Usually about one ounce or thirty grammes will be required, given best on an ordinary ether cone made of cardboard and a towel. About three ounces will be needed for the period of one hour, in severe operations. If a more prolonged and powerful effect is needed, then one of the following mixtures is used, No. 3 being naturally more powerful than No. 2, because its boiling point is higher. The formula for No. 2 is:

℞ Chloroform, 45 parts;
Petroleum ether, 15 parts;
Sulphuric ether, 150 parts.

The boiling point of this mixture is 40° C. For No. 3:

℞ Chloroform, 30 parts;
Petroleum ether, 15 parts;
Sulphuric ether, 80 parts.

The boiling point of this mixture is 42° C.

The petroleum ether is said to have no deleterious effects and seems to modify the effect of the chloroform and dilute the sulphuric ether without altering its general influence. It is to be remembered that only petroleum ether which boils at 60° to 65° C. is to be used. The ordinary petroleum ether, or benzine of the drug stores, which boils at 55° C., is not suitable. Aside from the disagreeable odor of these mixtures, which is a disadvantage, they are asserted to cause less cyanosis, less mucus or other disagreeable effects than any anesthetic known, and to be safer in every way than either ether or chloroform; and they have been tried quite largely with success in this country by a number of surgeons, among whom may be mentioned Dr. Meyer and Dr. Maduro, of New York.

THE TREATMENT OF GONORRHEA.

Janet in the *Revue de Thérapeutique* of December 1, 1897, makes a further contribution on this subject. It is extremely interesting because the publication of his first articles has been followed by so many conflicting reports as to the value of the methods he advised that the general practitioner is entirely at a loss to know whether or not these methods are of the faintest service.

Janet states that while we are waiting for some practical results from the sero-therapy which has been investigated by Wassermann, Christmas, Nicolaysen, and Schaeffer, we are

compelled to resort to the most efficient form of antiseptic treatment. This the author holds is by means of copious irrigations with potassium permanganate. Since 1892, when the author's first paper appeared, a paper based on his first cases, he has not written on the subject. His present communication is based on a very much wider experience.

Janet believes that the greatest service he has rendered has been to convince the profession of the folly of the pernicious practise of letting a gonorrhea run. It is to this practise he attributes the vast majority of strictures, cases of sterility, prostatitis, orchitis, rheumatic atrophies, and ankylosis. Efforts at abortive treatment used to be exceptional. In the last year Janet has not seen three cases in which he did not attempt abortion of the disease. In the last eight years he states that he has not had a single case of stricture in patients whom he has seen from the first. He has only seen three cases of orchitis, all insignificant, and has never had an instance of rheumatism, tenosynovitis, conjunctivitis, or any of the other complications of gonorrhea.

Guided by his long experience the author no longer claims that permanganate will necessarily result in rapid cure. He has had to continue his application for two or three months and has given forty and even seventy lavages. He states that at the end of the treatment the urethra will be in as good a state as it was in the beginning, and through the entire course of the treatment the patient is not exposed to any of the ordinary complications of gonorrhea. These prolonged treatments he states are not necessary in more than twenty per cent. of cases, and are due to the fact that extra-urethral and inaccessible gonorrheal foci are established which should be carefully searched for.

With the various agents which have been recommended recently the writer has had but little experience, but with some of them, particularly with argonin, he has succeeded in cases which did not yield to permanganate of potassium.

The armamentarium required for the permanganate treatment is as follows: A quart irrigating bag or vessel provided with a rubber tube nine feet long, on which is placed a stop-cock and in the end of which is fitted a cannula of glass or hard rubber with a blunt conical end; and a method of suspension by means of which the irrigating bag can be drawn to varying heights. This is best done by hanging it on a pulley over the wheel of which is passed a cord attached to the bag; a urethral syringe to be used for cocaine; a basin; a one-per-cent. solution of potassium permanganate and a one-fourth-per-cent. solution of cocaine; warm boiled water; a graduate for the purpose of measuring solutions; a bed, table or chair on which the patient can either lie down or sit up. It is perfectly possible to practise these irrigations with the patient standing against a wall or supported by a piece of furniture. It must be remembered, however, that on the first irrigation patients often become faint.

Abortive treatment of gonorrhea should be attempted not only from the very first hours of inflammation, but during the first few days, unless the phlegmonous symptoms are extremely severe. The question should be decided rather by the severity of inflammation than by the number of days the disease has lasted. As a rule the treatment of beginning urethritis should be confined to the anterior urethra, which alone is infected; none the less the second urine should always be watched for shreds, and should these appear the complete lavage should be practised.

When the anterior urethra alone is to be washed out the bag is elevated not more than one and a half feet above the level of the penis; the urethra is then forcibly distended, pressing the nozzle into the meatus. This process is repeated until all of the solution is employed, the surgeon occasionally during the course of the treatment clamping the tube of the irrigator and gently milking the urethra from the perineum forward. These irrigations are made twice a day with a quart of 1:2000 solution. If the washings are made rapidly, the cannula having a fairly wide aperture, the weaker solutions are not required. If the washings are made slowly they excite a violent reaction, causing marked congestion; the strength of solution should be lessened to 1:3000 or even 1:4000, increasing to 1:2000 as soon as practicable. After three or four days but one washing a day is administered, but this is so arranged that after the evening irrigation the next one is practised about noon the next day, the following one in the early morning, and thereafter in the morning. These washings are in strength 1:1500, and toward the eighth or ninth day even 1:1000. In cases which do not present traces of inflammation upon the ninth day, the discharge being mucous, almost transparent, the next irrigation should follow

thirty-six hours later and the next forty-eight hours after that. If there is no discharge or a very slight one containing no gonococci, the washings can be omitted, the patient being cautioned to come back for treatment at the slightest sign of return of discharge or unpleasant sensations. If there is recurrence the treatment is resumed, one washing a day, from 1:2000 to 1:1000 being administered, careful search being made for signs of posterior urethritis.

If at any time during treatment the second urine passed shows admixture of pus, the entire urethra must be washed out. To accomplish this the anterior urethra is injected with 1:400 solution of cocaine. This is held in for a minute. The anterior urethra is then washed out with a pint of permanganate solution. The cannula is then pressed firmly into the meatus and the bag is elevated to the height of three and a half feet. The patient is then told to make an effort to urinate, when the liquid will flow into the bladder. The spasmodic contractions which sometimes occur are signs for the momentary withdrawal of the nozzle from the meatus. This posterior irrigation at first may be unsuccessful; sometimes it is only after three or four days that the patient is able to allow the fluid to pass into the bladder. It is occasionally necessary to repeat the cocaine injection during the course of the treatment before the sphincters of the bladder will yield. With gentleness and patience the penetration of the liquid into the bladder can be accomplished in practically every case.

For total irrigation the beginning strength of the solution should be 1:4000, unless patients have been habituated to anterior irrigation. In the latter case, or when the patient is not particularly sensitive, the strength of the solution is the same as that used in the anterior urethra.

Great importance attaches to the time consumed in irrigation. With solutions of equal strength, a washing which occupies six minutes is twice as energetic as one that occupies three. When the washing is practised early, when the urethral inflammation has disappeared, and when very slight inflammatory reaction is excited, patients can be entrusted with the treatment.

Acute and hyperacute gonorrhea will only be encountered in cases which have not been treated by irrigation. Even in those cases Janet holds that an attempt should be made to suppress the discharge by copious flushings. When the anterior urethra alone is involved success is almost certain, though the ultimate cure is likely to be slow. The first injection should be 1:4000, practised twice a day. These are usually efficacious in promptly alleviating the inflammatory symptoms. When the posterior urethra is infected the treatment is equally satisfactory, provided complete irrigations are possible under the use of cocaine. If it is impossible to practise these irrigations, and this is demonstrated by repeated careful trials, it may be advisable to allow the case to run on until from its self-limiting nature the severe symptoms subside, or to pass a fine Nelaton catheter into the bladder, fill it with weak permanganate solution, and allow the patient to pass it out voluntarily. This should only be practised when patients can be confined to bed, and would be particularly indicated when rheumatism or other general complications are threatened.

The use of sandal is condemned absolutely, Janet holding that he has seen two instances of orchitis develop from this drug. The morning drop is likely to persist for a long time after other symptoms have disappeared.

In the treatment of subacute and chronic gonorrhea permanganate irrigations give results as satisfactory as are the rule when they are adopted in the early stages of acute disease. Satisfactory results are obtained in cases of simple chronic gonorrhea without profound alteration of the mucous membrane, such as is found after repeated attacks or after a fresh infection of old gleet. In a profoundly chronic case accompanied by extensive pathological alterations and yielding a discharge that contains gonococci, results are very far from satisfactory. The treatment of the chronic or subacute gonorrheal discharge consists in administering a series of nine to twelve lavages of permanganate. Sometimes more are required. The irrigation should involve the entire urethra. It should begin with a strength of 1:4000 and this should be increased rapidly to 1:1000, the irrigations always being preceded by an injection of cocaine 1:400. The injections are lessened in number as in the case of acute gonorrhea. It is infinitely better to continue irrigations longer than absolutely necessary, than to allow a discharge to develop again which requires a new series. Sometimes this requires a continuance of irrigations for weeks or months. The most valuable guiding sign as to the possibility of stopping treatment without recurrence of discharge is the disappearance of the gonococci; after this the disappearance of pus and of the

yellow morning drop; finally, the cessation of tickling, itching sensations in the urethra. The shreds in the urine are of little value. The persistence of a mucous or muco-purulent, colorless drop should not prevent the surgeon from stopping treatment.

Before discharging the patient the physician should always endeavor to demonstrate positively that cure is complete. This is especially useful as a means of distinguishing between the relapse of an original inflammatory infection and a fresh gonorrheal infection due to fresh exposure, often with a wife who has been originally infected by the husband and has not been cured. The proof is furnished by causing the urine to become irritating by drinking beer, for instance, or by the results consequent on the first seminal discharge following the cessation of irrigations. The proof afforded by allowing the patient to drink beer should not be attempted for eight days, since recurrence sometimes occurs spontaneously on the seventh day, and if excited by drink is likely to be more severe and more difficult to cure. The patient may take three or four glasses after dinner or even more, and should present himself for examination on the next day and the day following. If no pollutions occur for sixteen days the patient may be allowed to practise intercourse wearing a cover. Provided this is not followed by recurrence of discharge the patient can be pronounced cured. These proofs are only valuable in showing the absence of gonococci after the irrigation treatment.

After a patient is once cured he should be warned that he is especially receptive to fresh infection for two months. He must be warned to avoid every occasion of contracting a new attack of gonorrhea. These patients are also extremely sensitive to infection with other microbes. It is not uncommon for them to develop a purulent discharge without exposure; under the microscope no gonococci are found. Lavage of the urethra with 1:10,000 bichloride solution results in cure.

Independently of all infection it is not uncommon to notice a persistent muco-purulent discharge. If the urethritis preceding this discharge was apparently recent and did not follow upon an old gleet, it is wise to allow this discharge to disappear spontaneously. If it persists for more than two months a complete anterior irrigation of silver nitrate should be practised. After the disappearance of gonococci lavages of silver nitrate, corrosive chloride, and chloride of zinc, and dilatation of the canal with metal sounds or those coated with a pomade, are indicated.

Those who have most conscientiously followed out the modern antiseptic treatment of gonorrhea will be inclined to indorse nearly all of Janet's statements, and to recommend irrigations appropriately modified to each individual case as the safest, the surest, and often the quickest means of curing gonorrhea. His methods of proving cure are, however, to be condemned without qualification. Also, it would be well if he could devise a method by which patients could be induced to regard a perennial non-gonococcal muco-purulent drop with the resignation, even complacency, exhibited by Janet.

Reports on Therapeutic Progress

HYPNOTICS: THEIR CONTRAINDICATIONS AND ILL EFFECTS.

In the *British Medical Journal* of October 2, 1897, McPHEDRAN, of Toronto, writes an able paper with this title. He says we have so little exact knowledge of the essential nature of sleep and of the precise effects of the various medicines that produce it, or a somnolent state resembling it, that little more can be made than a general statement of the contraindications to and the ill effects of hypnotics.

As to the nature of sleep, some believe that it is an arrest of all the functions of the central nervous system except those essential to life; others that sleep itself is a function. In either case its occurrence is probably largely due to the accumulation of fatigue products—neurotoxin in the central nervous system. How these fatigue products act is uncertain, but probably by interfering with metabolism. The accumulation of waste products may have a paralyzing effect on the protoplasm of the neuron, lessening its affinity for the oxygen of the blood, possibly by diminishing its alkalinity. As a consequence contraction of the neuron or its processes takes place. There is a loss of contact of the neurons as a result of such contraction, and consequently loss of function in the higher nerve centers causing loss of consciousness. In the lower centers resistance is greater, and there is only a diminution of the vital function, as shown by the slower breathing and pulse-rate, and loss of the reflexes.

Of the physiological disturbances causing sleeplessness, our knowledge is no less im-

perfect than that of the cause of sleep. If sleep be due to the fatigue products, sleeplessness can scarcely be due to their absence, because they must be present in increased quantities in conditions of wakefulness. In insomnia there is always disturbance of metabolism with inadequate excretion of waste products, and therefore, also, of inadequacy of nutrition. It is possible that on this account there is a loss of stability in the neurons leading to irregularity in the action of many of them in response to the stimulus of the fatigue products. That there is derangement of the functions of the neurons in sleeplessness the loss of mental power and of general physical well-being amply proves.

The loss of power of compensation in any part can be restored only by lessening the labor and improving the nutrition of the part. The treatment of failure of compensation in the nervous system is no exception to the rule. In insomnia the neurons fail to compensate for the overstrain to which they have been subjected, and in their restoration all agencies which may interfere with the removal of waste products and increase of nutrition, or lessen their stability, should as far as possible be eschewed.

On theoretical grounds, then, it follows that hypnotic drugs are always contraindicated, but in practise it is often best "to do a little wrong to do a great right."

In a general way it may be said that hypnotics should not be used in those in whom the cause of insomnia is palpable and removable. These causes may be briefly summarized as follows:

1. Digestive derangements, whether from improper food and drink, insanitary surroundings, or from whatever cause. In this class are to be included nearly all cases of disturbance of sleep in children, in whom faults of digestion form the bulk of all their ailments. In the adult, however, these same causes play a very, if not the most, important part in the production of insomnia, much greater than they are usually credited with. In the adult the insomnia is, however, less often due directly to the disturbance of the stomach and bowels—that is, due to a reflex cause—than it is in children, whose nerve centers lack the stability of the adult; but it is more often the result of the absorption of toxic agents produced by the ill-digested food in the digestive tract.

2. Local irritations, such as dentition, irritable diseases of the skin, disturbance of the urinary tract. These are also most common in children. To these may be added reflex disturbances from disease of the uterus and its appendages. Eyestrain is credited with being a frequent cause of insomnia as well as other reflex disturbances.

3. Overwork and the neurasthenic condition resulting therefrom. In the majority of these cases nutrition and excretion play the most effective part, as with a good state of nutrition and due observance of the laws of sleep, overwork is almost impossible.

4. Anxiety and worry. These should be really included with overwork, as they disturb the stability of the cerebral cells in the same manner.

5. Toxic causes are common. Many of them result from derangements of digestion, and are included under that head. Others result from chronic disease—as gout, lithemia, chronic constipation, and Bright's disease. With these may also be included toxemia produced by excessive indulgence in tea, coffee, alcohol, tobacco, and the habitual use or abuse of such drugs as morphine, chloral hydrate, cocaine, etc.

6. A very important group of cases of insomnia is formed by those suffering from disturbed cerebral circulation, whether due to cardiac, renal, or pulmonary disease, or to disease of the cerebral vessels themselves. The blood-supply may be excessive and vascular tension high, as in arteriosclerosis before cardiac compensation fails; or defective and irregular, as in dilatation of the heart. While in some of these conditions the stronger hypnotics are the potent means at our disposal of giving relief, not only to the insomnia, but also to the causes of it, yet in many of them their use would be unwise, and might be disastrous.

7. In not a few sleeplessness is the result of long indulgence in pernicious habits, mental and physical, in regard to sleep, such as irregular hours, various dissipations, the conning over after retiring of the difficulties and reverses, and perhaps the successes, of the day. Such people are loth to believe how much can be done to recover the power of going to sleep at will. It is vain to retail to them the facts of Napoleon, Wellington, and Grant being able to lie down on the field of battle at any time and take a short sleep if needed. They should be encouraged in the effort, and every cause of disturbance removed and such conditions sought as will bring most composure of mind.

In the treatment of insomnia, then, our first duty is to seek out diligently and treat

intelligently such obvious causes as may exist, as: to remedy digestive derangements, whether of stomach or intestines; to stop the ingestion of unsuitable food and drink; to relieve constipation; to stimulate the free elimination of fatigue products; to relieve local irritations and reflex disturbances; to stop overwork and bring the daily duty within the capacity of the worker; to relieve anxiety; to correct as far as possible all disturbances of circulation; to relieve anemic and debilitated conditions; to secure due regard to sanitary requirements; to cultivate good habits of sleep. In all this our aim is to relieve all sources of irritation, direct or reflex, from the cerebral cells, to supply them with ample nutrition, and to cultivate healthy habits in them. Not until these indications are met is the resort to hypnotics legitimate, unless it be to overcome a temporary difficulty; the further use of them is injudicious, if not injurious.

Unfortunately, there is a large class in whom the cause is not easily discovered nor easily removed; or it may be quite apparent and yet impossible of removal. Of such are many cases of neurasthenia, hysteria, and hypochondria. Many of these have a neuropathic temperament, inherited or acquired. In them slight causes, mental or physical, may induce insomnia. Astigmatism may give rise to eyestrain that, though not noticed in health, causes headache or wakefulness in the debilitated condition; or it may be some slight derangement of the digestive system that is sufficient to prevent sleep in the abnormal state of health. Whatever the cause, though it may be very trivial judged by the standard of health, in the debilitated condition of the nerve centers it is often sufficient to produce disastrous effects.. In the mental habit that has developed its importance may be greatly magnified. There is a weakness of will power and a ready acquiescence in whatever brings temporary relief, so that the drug or other habit is easily formed and may be difficult to avoid, and once formed, always difficult to overcome.

When, then, should hypnotics be used? In acute disease sleep is often a necessity in order to secure such a restoration of the vital powers as to render recovery of health, or even continuance of life, possible. In sleep, general excitability of the nervous system is quieted, the action of the heart is reduced, and tissue waste is diminished, while more waste products are excreted. All this contributes to improved metabolism and renewed vitality. So that in the conditions occurring in acute disease hypnotics may be essential; the sleep obtained, though not characterized by benefit to a degree equal to that of natural sleep, is often invaluable. In chronic diseases the same temporary need may arise, but the use of hypnotics in the ordinary conditions of chronic disease is rarely attended by anything but evil. Of the injurious effects of hypnotics on the cells of the central nervous system practically nothing is known. Changes in the nuclei of the cells have been described; they become smaller and more homogeneous, and color more deeply; but we know what interpretation to put on this. While we know nothing of the histo-pathologic changes, of the physiological effects there is much known in a general way. The author need not stop to detail the injurious effects of morphine, chloral, cocaine, and alcohol.

Of the continued use of the bromides, it might be pointed out that in addition to the general cachexia with loss of appetite, disturbed digestion, anemia, loss of memory, mental apathy, and commencing paralysis and trembling of the extremities that may be developed by their immoderate use, there may occur also marked mental aberration and alarming homicidal tendencies.

Chloralose in three-grain doses has produced alarming collapse in a woman within an hour. Recovery was slow.

The administration of sulphonal is, even in moderate doses, occasionally followed by fatal results. The symptoms set in with abdominal pain and vomiting, scant and usually dark urine, owing to hematoporphyrinuria. Collapse results, soon followed by death. These symptoms may appear suddenly after the patient has been under treatment for some time and has been benefited by the drug.

These effects have been most frequently met with in women with marked constipation. Owing to the constipation there is probably retention of the sulphonal in the system. But serious results have occurred without the existence of constipation to cause retention of the drug. Eighteen grains daily for three days has caused collapse with pallor, weak, rapid pulse, anemia, diplopia, myosis, hyperesthesia, and paresis, the patient being only able to walk with difficulty two weeks later.

In a woman twenty-eight years old, the subject of melancholia and hysteria, thirty grains given in two doses one and a quarter

hours apart caused sleep for twelve hours; then she was aroused. But the somnolence increased, the pupils contracted, and in forty hours death occurred suddenly.

Hematoporphyrinuria is supposed to be due to gastro-intestinal hemorrhage. In dogs killed with sulphonal active and passive congestion of the meninges has been found, with, in some cases, hemorrhages at the floor of the fourth ventricle.

Marked congestion of the spinal cord and degeneration of the nerve cells of the anterior horns of its lower portion have also been found.

It is evident that greater care is necessary in the administration of this drug than has generally been observed. The laity are coming to look upon it as a safe hypnotic, and many use it without restriction.

The continued use of trional tends to give rise to various disturbances of consciousness, of speech, of hearing, and of vision, to loss of memory, and to ataxia of movements in general. There may be involuntary excretions of urine and feces. To prevent these untoward symptoms its use should be intermitted from time to time.

Paraldehyde is a comparatively safe hypnotic, yet large doses of it have been followed by serious effects. Great dyspnea and collapse have resulted from one drachm in a case of chronic bronchitis. Somewhat larger doses have caused marked delirium with paresis of the functions generally, resembling delirium tremens of alcohol.

The proneness to the formation of a confirmed habit is a strong reason why any hypnotic should be used carefully and with due appreciation of the needs of each individual case. And this propensity to form the drug habit is especially marked in neurasthenics, the very class from which the cases of insomnia are most largely drawn.

In neurasthenia and in conditions of unstable nervous or physical equilibrium, whatever develops or creates self-discipline and self-control in the patient is of great value. Such self-discipline is interfered with by hypnotics.

In some conditions the amount of narcotics necessary to induce sleep is so great that it is better to let the patient lie awake for two or three nights even than to give such large quantities.

If power of compensation is lost, it cannot be restored by any means other than by lessening the labor and improving the nutrition of the parts that have failed. It would seem eminently unfitting in such a condition to resort to medication that interferes with digestion and assimilation and retards the processes of elimination, when the hope of cure must rest on restoration to a healthy metabolism.

It is wise practise to give hypnotics rarely, and only when other means have failed; then only in the smallest dose necessary to give sleep, being satisfied with the least amount of sleep that is safe.

CASES OF GENITO-URINARY DISEASES TREATED BY KAVA-KAVA.

LESLIE PHILLIPS writes on this topic in the *Edinburgh Medical Journal* for August, 1897. He begins by expressing the hope that a brief record of results obtained from a clinical inquiry into the action of kava-kava in genito-urinary cases may be of value, particularly as his results do not in some respects coincide with those of previous inquirers. The preparation used was the fluid extract of the root prepared by Messrs. Parke, Davis & Co. The dose given was one drachm thrice daily, largely diluted with water, and the observations were not complicated by the simultaneous use of, or combination with, other drugs, as the author notes is the case in not a few of those published cases in which benefit is ascribed to kava. The general results obtained are here given, and a few only of the cases are given in short detail. Kava appears to have won its best reputation in acute or recent gonorrhea. In the author's experience these are the cases which benefit least from its use.

The following case stands in sharp contrast to the second, in which the drug used early in the acute stage of gonorrhea appeared to produce the complication which in the present case it cured.

Gonorrheal epididymitis; rapid beneficial action of kava-kava: Alfred H., in the fifth week of a gonorrhea, was attacked with a left acute very painful epididymitis, attended with complete subsidence of the urethrorrhea. Kava-kava was ordered. He went about his work as usual, and no local application was ordered. Three days after he began to take kava the discharge reappeared in moderate quantity, and the pain in the testis was relieved. In one week the swelling had very largely subsided, and in fourteen days the testis was of normal size, though a little indurated.

The author has not found kava of use in sexual debility, with frequent nocturnal emis-

sions—that class of cases often labeled "spermatorrhea"—nor in chronic cystitis due to prostatic obstructive disease. In a case of gonorrheal rheumatism it produced at first a decided diminution of the pain, but the effect was evanescent.

THE PRODUCTION OF PLASMATIC CELL JUICES FROM THE LOWER GERMS.

H. BUCHNER delivered an address before the Medical Society of Munich on November 10, 1897, based on researches conducted at the Hygienic Institute of the University of Munich, in which he stated that during the course of the past year certain results of interest had been obtained. In the first place Professor Edward Buchner, of Tübingen, succeeded, with the material assistance of Dr. M. Hahn, in developing a method which secures the cell juices of the lower germs practically unmodified. Briefly described, this method consists in mechanical trituration of the moist germ-mass admixed with infusorial earth and fine quartz sand, followed by expression of the doughy mass under hydraulic pressure of 400 to 500 atmospheres.

The first experiments were made with compressed yeast, from one kilo of which was obtained 500 cubic centimeters of a clear, yellowish, slightly opalescent liquid, which on heating coagulated almost *in toto*, and hence possessed a large percentage of coagulable albumen as it occurs in the animal organism. This is a new discovery, for while the lower germs were previously known to contain albuminoids, the presence of true albumen has never until now been demonstrated.

Very remarkable also is the presence, first observed by M. Hahn, of powerful digestive enzymes in the expressed juice of yeast—enzymes which must plainly owe their origin to the yeast cell. To their activity must be attributed the striking fact that the abundant quantity of albumen in the yeast cell juice disappears quite rapidly at the temperature of the incubator, even when, by the addition of an antiseptic (as, for example, chloroform) the development of living germs is completely excluded. We accordingly have here a species of autodigestion which can be ascribed to nothing else than the action of enzymes.

Another phenomenon of fundamental importance was observed by Edward Buchner in the expressed juice of beer yeast—the *development of genuine alcoholic fermentation without the presence and cooperation of any living organism whatsoever*. All that is necessary is to add a little sugar solution to the clear juice (should the juice not be clear it is to be clarified by passing it through filters of "kieselguhr" or porcelain); bubbles of carbonic acid appear at once, or after five to fifteen minutes, according to temperature, and the fermentation continues in the same intensity for days. This phenomenon, which at first provoked many doubts, has now been established by oft-repeated experiments, and has been sufficiently studied in a chemical light to be regarded as a positive datum. We are thus taught that in the process of fermentation it is not the vitality of the yeast cell as such that accounts for the chemical changes; rather these changes must be ascribed primarily to a special enzymic substance contained in the yeast cell.

This enzymic substance, which has been named *zymase*, is of course the product of the yeast cell, but is capable of exerting its action after it has once been elaborated independently of the living cell. A remarkable fact is its susceptibility to extraneous influences. Very slight exposure to warmth is sufficient to destroy its activity, whereas antiseptics, such as one- or two-per-cent. solutions of arsenite of sodium, which are very injurious to the living cell, have but little influence upon it. Again, the action of zymase is extinguished when the expressed yeast juice containing it is stored for even a short time. This fact, in conflict with earlier views, is probably due to the process of autodigestion already mentioned. Dried zymase is permanently active. It can be precipitated from the expressed yeast juice with alcohol and can be isolated to a certain degree of purity.

After it had been shown by these experiments that the new method really permitted us to obtain the contents of germ cells in unmodified and active form, the thought at once suggested itself that the new method might also be applied to bacteria, especially the pathogenic species. Since new and previously unknown properties had been observed in the expressed juices of yeast cells, there was ground for the hope that special and specific properties would be encountered in the expressed juices which might be prepared from bacteria. The task thus outlined (in which, of course, many technical and biological difficulties remained to be overcome) fell naturally to the lot of Dr. M. Hahn, in-

asmuch as he had done so much in the elaboration of the general method, and his results are given in the following paragraphs. Buchner merely mentions that he has selected for the plasmatic cell juices of the various lower germs, obtained by the new method, the common and comprehensive designation of "Plasmins." This name indicates that we have to deal in all these cases with albuminous plasmatic liquids. Individually they are to be differentiated under the names of "typhoplasmin," "choleraplasmin," "tuberculoplasmin," etc.

With the tuberculoplasmin Buchner and Hahn have treated a series of guinea-pigs, previously infected with a pure culture of tubercle bacilli or with the human sputum containing bacilli. In most instances the treatment was begun two weeks after infection, with very small doses, gradually increased. The animals reacted distinctly in every case, in the main with moderate but often with more pronounced symptoms of fever. The treatment was continued for months.

Of the large number of animal tests we will single out only those which can be regarded as truly demonstrative—that is, those in which the control animals, infected at the same time and in the same measure, succumbed more than one and a half months ago to pronounced general tuberculosis. The other series of tests are not mentioned for the reason that as a result of the behavior of the control animals they can attribute to these tests for the present no absolute demonstration of power. Only twenty-three animals are to be considered. Of these, six were control animals. These six animals succumbed within one and one-half to four months after infection to a pronounced disseminated general tuberculosis. Out of seventeen animals treated with tuberculoplasmin, five yielded absolutely negative results—that is, they died after being treated two to three and a half months; autopsy showed pronounced general tuberculosis, without any modifications which might indicate a curative process or warrant the inference that the dissemination of the tuberculosis had been visibly impeded. Three of the treated animals died within the first one and a half months of treatment—some within the first fourteen days; and in view of the shortness of the space in which they received no treatment at all Buchner and Hahn are not in a position to use these animals for statistical purposes in either a positive or a negative sense. Four animals showed partially positive results—that is, they died after several months of treatment, exhibiting in their organs tuberculous modifications, but the dissemination of the tuberculosis was less marked than in the control animals, the lung lesions being less pronounced, or not at all invaded. Further processes were perceptible which pointed to cure, notably a marked formation of connective tissue in the neighborhood of the tubercle. Five animals yielded an incontrovertible, positive result, inasmuch as they are to-day alive, whereas the control animals succumbed one and a half to two months ago.

If we consider the great susceptibility of the guinea-pig to tuberculosis, as well as the potency of the injection employed, we must admit that the results obtained—the preservation of almost one-third of the injected animals—cannot be termed an unfavorable showing. And Buchner and Hahn cannot avoid referring these results to a certain specific action exerted by the tuberculoplasmin on the tuberculous infection; for the natural power of resistance in guinea-pigs is *per se* a very slight one and seems to be susceptible of augmentation only within very narrow limits—for example, by the production of hyperleucocytosis.

Buchner and Hahn are by no means of the opinion that tuberculoplasmin is a remedy suited to all cases of human tuberculosis. The issue of the experiments thus far made seems rather to support the view that experimentation with the remedy at the bedside would be justifiable. The clinical experiments thus far made, although few in number, have at least established the harmlessness of the remedy when carefully administered. Buchner and Hahn feel that they ought to lay stress on the fact that it is possible with their process to obtain the cell contents of tubercle bacilli in a relatively easy and harmless manner as well as in a form which renders possible therapeutic employment.

It is not, however, to be expected that the results in the human patient will be as great as those obtained in the tuberculosis of guinea-pigs. The pulmonary tuberculosis of human beings usually presents itself for treatment in a comparatively much more advanced stage; it exhibits great individual fluctuations and frequently secondary infections. All these facts combine to form a more highly complicated morbid process than that which confronts us in guinea-pigs—which tends to baffle the correct application

of a specific remedy. Again, it must always be remembered that the guinea-pig receives per gramme of body weight much more specific substance than is ever the case in the human being; for considerable difficulties will always confront the single injection of large quantities of such a remedy. In the small doses, however, which can be injected into human beings, there is certainly always present a small quantity of specific substance; and if it be desired, so to speak, to impregnate the diseased organism by specific substances, it will be necessary to resort to frequent injections which must be prolonged for months, beginning with small doses and gradually increasing the quantity of each injection. Under such treatment the tuberculoplasmin will also produce a non-specific action—hyperleucocytosis—whose favorable influence on experimental infection has been reported from various quarters.

GELATIN AS A HEMOSTATIC.

The carpenter's time-honored recourse to the glue-pot in case of cut fingers and the like has lately received scientific justification at the hands of Dr. PAUL CARNOT, an interne of the Paris hospitals, who treats of gelatin as a hemostatic in *La Presse Médicale* of September 18. He divides hemostatics into two great groups—those that, like ergotin, constrict the vessels and retract them, leaving to spontaneous coagulation the work of obliterating the openings, and those that, applied locally, hasten coagulation, such as perchloride of iron, the salts of calcium, gelatin, gelose, etc.

There are several objections, M. Carnot thinks, to the vaso-constrictor hemostatics, such as ergotin, pyoktanin, and extract of suprarenal capsules. In the first place, most of them are very poisonous. In the next place, when coagulation takes place in a retracted vessel, the clot is strained and apt to be torn on the return of the vessel to its normal caliber, thus occasioning a recurrence of bleeding. Moreover, the arterial pressure is augmented, and that is an unfavorable condition if many vessels are involved. Finally, general vaso-constriction facilitates infection in an organism weakened by hemorrhage. With regard to this point, he cites Bouchard and Charrin as having shown that vaso-constriction is a weapon in the hands of micro-organisms at the time of their implantation, and that the system reacts by setting up vaso-dilatation, which favors diapedesis and the diffusion of defensive juices. Recent experiments, he adds, have shown that at the beginning of an infection it is of great importance to effect vascular dilatation; if rabbits infected with a fatal dose of such cultures as that of Eberth's bacillus, for example, are made to inhale amyl nitrite at once, they survive, whereas the test animals perish in a few days. For these reasons, M. Carnot thinks the use of vaso-constrictors should be restricted to cases in which the hemorrhage is insusceptible of topical treatment.

The hemostatics of the second group—the coagulants—on the other hand, he says, do but exaggerate the natural hemostatic process. The coagulation of blood outside the vessels plugs them efficiently in the majority of cases, but it fails if the wound is too large or if the blood is so altered that its coagulability is impaired, as in animals poisoned with peptones or leech extract and in cases of hemophilia. The author adds the interesting observation that he has seen two dogs under the influence of peptones die of intestinal hemorrhage caused by ascarides. But there are grave objections to most of the coagulants that are in common use, says M. Carnot, especially to perchloride of iron. A few of them, however, are well-nigh harmless; they are the salts of calcium, especially the chloride, and gelatin and gelose.

It seems that the coagulant property of gelatin was discovered by Dastre and Floresco, whose report of experiments was made to the Society of Biology in February, 1896, and published in the *Archives de Physiologie* for April of that year. They were properly careful to distinguish between coagulation and gelatinization, and they found that an amount of gelatin that was too small to cause gelatinization augmented the coagulability of the blood. But M. Carnot thinks that both properties, the coagulating and the gelatinizing, are of value in bringing about hemostasis, and it is their association in gelatin that makes him prefer that substance to calcium chloride. Since gelose gelatinizes at a temperature higher than that of the human body, he adds, it is still more useful. Experiments have shown him also that both gelatin and gelose play the part of nutrients in a wound and hasten its healing.

M. Carnot states that he has used gelatin both as a local hemostatic and to modify the coagulability of the blood as a whole. As a local hemostatic, he employs a solution of gelatin in water, or better, in the physio-

logical (seven to a thousand) solution of sodium chloride. This is sterilized by keeping it at the boiling point of water for fifteen minutes at a time on two occasions, two days apart. The temperature should not be raised to 239° F., for that sometimes destroys its gelatinizing property. The strength of the solution varies according to the end in view; generally it is from five to ten per cent. An antiseptic may be added without impairing the coagulating and gelatinizing properties of the solution, but it is only in special cases that he does it, for one of the advantages of gelatin is its harmlessness.

It was in comparatively simple cases that M. Carnot first tried gelatin, such as those of rebellious epistaxis in children affected with hemophilia. In one such case the child was almost bloodless, having several attacks of nosebleed daily. Antipyrin, perchloride of iron, and other applications had been used without success. The nostril from which the blood proceeded was injected with thirty or forty cubic centimeters of a five-per-cent. solution of gelatin, and a tampon wet with the same solution was left on its orifice. The hemorrhage stopped at once. On the following day bleeding took place from the other nostril, and it was stopped in the same way. There was no more epistaxis, but the child had in succession purpuric, intestinal, pericardial, and other hemorrhages, and at the time of its death it had only 365,000 red corpuscles left (to the cubic millimeter of blood, we presume). The treatment, then, was efficient locally, says M. Carnot, in spite of the great alteration of the blood.

M. Carnot recommends that the solution be not used too hot, partly because gelatinization would thereby be retarded, and partly because the gelatin acts only by contact with the blood; the energetic vascular constriction produced by the heat would arrest the hemorrhage for an instant, but blood and gelatin being no longer in immediate contact, no plugging clot would be produced. It is better, he says, to use a solution of about the temperature of the body. The mode of application is the same for any hemorrhage from a cavity readily accessible. For cutaneous wounds, and particularly for those of the fingers and hands, M. Carnot has frequently used solutions of gelatin. He simply moistens the wound with a few drops of the sterilized solution, and leaves on it for a few minutes a pledget impregnated with the same solution. Hemorrhages from ruptured varices and those from the rectum are amenable to the same treatment, but hemorrhages from the stomach are not, for the gastric juice at once transforms the gelatin.

In cases of uterine hemorrhage, says M. Carnot, the application is a little more complicated, for the necessity of direct contact between the gelatin and the bleeding vessels requires the injection to be intra-uterine; hence it should be done with all known precautions, and especially with sterilized solutions and aseptic instruments. The author has thus far employed the treatment in only one case of metrorrhagia, due to a fibroma, and in that he was perfectly successful. He has often used gelatin water in place of hemostatic forceps, and has found it sufficient to hold tampons wet with the solution against the bleeding points for a few seconds.

Incidentally M. Carnot relates an interesting case of the successful replacement of a severed part. A young workman had the last joint of one of his fingers detached by a clean cut. About half an hour after the accident the author saw him at the Hotel Dieu. The young man had the end of his finger in his pocket, carefully done up in paper. The wound was bleeding very freely. The bleeding was arrested immediately by the application of a solution of gelatin stronger than that usually employed. M. Carnot then applied the detached portion of the finger, and kept it in place by wrapping the whole digit with iodoform gauze and then with strips of sticking-plaster. The man came back at the end of two days, when the severed joint was neither decomposed nor desiccated. Very curiously, says the author, the patient could feel quite a slight pressure on the end of the finger, but it had no sensibility to heat or to pain; perhaps, he adds, the sensation felt was only transmitted to the line of section. The "graft" was finally successful.

It is only on the lower animals that M. Carnot has tried gelatin in the more difficult problems of hemostasis. In experimental resections of very considerable portions of the liver, he says, he soon renounced all sorts of ligation, and now contents himself with a few seconds' contact of the gelatin solution with the bleeding surface, even taking pains not to make any pressure in applying it. As soon as a clot has formed and the surface ceases to bleed, the liver is replaced in the abdomen; generally a few cubic centimeters of the gelatin solution is poured into the peritoneum before the abdomen is closed, to guard against the danger of recurrent

hemorrhage; and he has never known death from bleeding to follow.

M. Carnot speculates about the use of gelatin in the case of a large wounded artery. After division of the carotid, he says, it would evidently have small chance of proving efficient; nevertheless, combining it with clamping of the vessel for a few minutes would perhaps give the clot time to adhere solidly enough to resist the arterial pressure, and thus do away with the necessity of leaving in the wound threads difficult of absorption.

As regards the use of gelatin for the purpose of enhancing the coagulability of the blood in its totality, M. Carnot can speak only with great reserve. Intravenous injections of gelatin in the human subject he thinks unwarranted, owing to the danger of producing massive clots. In several instances, however, he has injected gelatin subcutaneously and into the rectum with success. In a "bleeder" the spontaneous hemorrhages were thus made to cease; in another case purpura was caused to disappear rapidly. But the author says that he has been too much restrained by fear of rendering the coagulability of the blood too great to generalize concerning these results.—*New York Medical Journal*, Oct. 23, 1897.

ANTIPYRIN AND LACTATION.

After various researches made by M. G. Fieux, says a writer in the *Bulletin Médicale* of September 5, 1897, he reached the following conclusions:

1. Antipyrin certainly passes in a natural state into the milk.

2. Given in large doses, in two capsules each containing fifteen grains at intervals of two hours, it may be detected in the milk in from five to eight hours after its ingestion, and from nineteen to twenty-three hours afterward it cannot be discovered, so elimination lasts eighteen hours at the maximum.

3. The antipyrin during this time passes into the milk only in an excessively weak proportion, very much less than fifty parts in a thousand; it is only in exceptional conditions—for instance, when sixty grains are administered in sixteen hours—that it perceptibly reaches this proportion.

4. It does not influence in any way the quality of the milk and, particularly, the lactose, the casein, or the fat.

5. It seems to have no action at all on the secretion, which always remains very abundant, provided the woman continues to nurse.

6. From the absence of general symptoms and from examinations of the weight, the infinitesimal quantity absorbed by the nursling does not seem to have any unfavorable action.—*New York Medical Journal*, Oct. 23, 1897.

DEATH AFTER WORMSEED.

Dr. A. K. Bond reports a death due to an excess of wormseed, in the *Maryland Medical Journal*, August 7, 1897.

The patient, a boy about three years of age, complained of "stomach-ache" for several days. His ignorant mother made a diagnosis of "worms," although no worms were at any time seen in the stools, and going to the drug store purchased of the clerk a quantity of wormseed oil.

On the same night (June 28) she gave the child ten drops of the wormseed oil on sugar. Not all of the sugar thus medicated was taken. Next day the bowels were freely moved, no worms appearing, and no odor of wormseed being noticed in the stools.

On the morning of June 30, half an hour before breakfast, the mother gave half a teaspoonful of the wormseed oil undiluted. Half an hour after breakfast the patient vomited twice and went into a stupor. The mother being frightened sent for Dr. Bond. On arrival, he found the patient lying quiet, but he could be aroused by rough shaking. The eyes were closed, the pupils small but equal; the pulse and respiration normal; no fever present. Vomiting was secured twice by salt and water, the water coming up clear. The author gave one grain of calomel and ordered repeated half-teaspooful doses of castor oil at perhaps hourly intervals.

At midday the pulse was 96, the respiration 48, with snoring breathing and much mucus in the mouth, sweat on the face, deep stupor, and beginning twitching of the right hand. The pulse soon rose to 120. No urine had passed since the morning dose of the wormseed oil was given, and there seemed on external physical examination to be little or no urine in the bladder.

At 1 P.M. slight passages were procured by an enema, which smelled of wormseed; after which brandy was thrown into the bowel. The pupils at this time were equal and not unnaturally dilated. The mouth and hands twitched occasionally. There was deep stupor, from which the patient could not be aroused. The body was comfortably warm

At 3 P.M. the pulse was 128, the respiration 56, rattling as before, and diaphragmatic. There were large râles in the left side of the chest and little or no respiratory movement on the right side. No urine yet passed; sphincters holding; deep stupor. The spasmodic twitchings had ceased. Hot external applications were ordered, but it was evident that death was setting in. The patient died at 4 P.M. of this same day (June 30).

Two questions naturally suggested themselves: Is oleum chenopodii liable to produce fatal poisoning? and, if so, was the fatal issue in the case just related due to the administration of this drug? Upon the first point authorities are strangely at variance. The use of wormseed oil is wholly confined, as far as the author can learn, to North America. European writers do not speak of it, simply because it is in Europe unknown to the profession or public. The plant from which wormseed oil is obtained, the *Chenopodium anthelminticum*, is a native of North America, and began to be used as a vermifuge soon after the discovery of this continent. It grows very abundantly as a rank weed about country residences, and Baltimore is the chief center for the manufacture of its oil. It is a favorite domestic remedy in country families, prepared freshly by the women of the family for each occasion. When a child in the family is supposed to "have worms"—namely, round worms, ascarides lumbricoides—the yard about the house is searched, and without difficulty some of the weeds are found. A handful or two of the seeds are rubbed off the weed and dropped into a vessel. Boiling water is now poured on the unbroken seeds and allowed to cool; it is then poured off the seeds, sweetened with molasses, and given to the child in indefinite quantities until worms are passed, or until the child improves in health, or until the mother decides that her diagnosis was mistaken. Sometimes it fetches worms, being rendered aperient by the molasses or by subsequent cathartics. Even if no worms are brought to light, the child usually improves in health from some cleansing or tonic action of the wormseed tea on the digestive tract. As the tea is believed to be harmless, no definite quantities of the seed or of the tea are observed.

The oil of wormseed, prepared by the manufacturing pharmacists, is a much more powerful drug. Plain country people are somewhat afraid of it, as it is credited with occasional severe or fatal effects.

American writers on therapeutics seem to consider the plant and its preparations practically harmless.

Waring's Therapeutics, 1866, quotes Dr. Dewees as saying that it is a good anthelminthic (for round worms, of course), but that preexisting fever is a contraindication. No warning of any danger from its use is given.

Mitchell's Therapeutics, 1850, speaks favorably of its uses from hearsay, but gives no warning of danger.

Eberle's Therapeutics, 1847, speaks highly of it, and says that we may give an electuary of the powdered seeds in syrup in the morning before eating, and again some hours after supper; or may give of the wormseed oil to a child two or three years of age three to eight drops twice a day in sugar or mucilage, and after it has been taken thus for three or four days should administer a brisk purgative. No hint of danger from the remedy is given.

Bartholow's Therapeutics, 1880, gives a very brief description of the agent: that it increases the action of the heart, skin, bronchial passages, and kidneys, being a diffusible stimulant. Here also no note of warning against possible injurious effects is given.

H. C. Wood's Therapeutics, 1891, states that the oil becomes darker and less fluid with age; that it is very efficient against round worms; that the dose of the wormseed oil is ten drops, to a patient three years of age, given on sugar before each meal for two days, followed by a brisk purge. No warning is given in the text against harmful possibilities. In a foot-note a reference is made at some length to a case reported by the late Professor T. R. Brown, of the College of Physicians and Surgeons of Baltimore, in the *Maryland Medical Journal* for 1878, vol. iv, pp. 20–28, in which a fairly healthy young man died two days after taking an ounce or more of wormseed oil. The foot-note closes with the remark: "It is plain that the wormseed was not the direct immediate cause of all these symptoms (related in the case report) or of the fatal result."

Foster's Dictionary of Therapeutics gives no warning that the chenopodium is in any way dangerous or that overdose is to be avoided.

FORMALDEHYDE AS A DISINFECTANT.

In the *New York Medical Journal* of October 16, 1897, DOTY gives the results of a careful study of formaldehyde as a disinfectant. He concludes that a careful analysis

of the results obtained in this experimental investigation to determine the value of formaldehyde as a disinfectant shows that this agent cannot be depended upon for disinfection where deep penetration is required. It can, however, be relied upon to penetrate letters and other thin packages if placed in an air-tight chamber. It is here that the importance and value of a vacuum is appreciated. Packages of the character just described are usually penetrated in a comparatively tight room. This has been proved not only by the germicidal effect upon the micro-organisms contained, but by the effect on blotting-paper, ribbons, and silk, colored with fuchsin and magenta, and placed inside of letters, the envelope being tightly sealed. The change of color is very apparent upon opening the package after treatment. In packages made of blankets, clothing, etc., the action of formaldehyde upon infected disks placed inside is uncertain and not always the same. As a rule, penetration does not occur; at least the organisms are not generally killed. This uncertainty would seem to decide the inefficiency of formaldehyde for deep penetration. For superficial disinfection — *i.e.*, of hangings, furniture, clothing, furs, silks, and other articles which can be spread out and the surface exposed— formaldehyde is an agent of undoubted value, particularly as it does not, as a rule, injure the finest fabrics, and therefore may be safely used in an apartment furnished with delicate paper-hangings and furniture.

In the selection of the method for disinfection with formaldehyde, it is evident that the use of a formaldehyde solution simply exposed on pans is not to be considered, provided other methods are available. The heating of pastilles of paraformaldehyde is a simple, effective and neat method of securing the gas, although at present it is a comparatively expensive one. It is necessary, however, that the apparatus for heating the pastilles should remain in the apartment until the time for disinfection has expired. The gas is therefore evolved slowly and its release depends upon the proper performance of a lamp which cannot be kept under observation. For the same reason it may not burn sufficiently long to reduce the pastilles to ashes, or an accident may happen. These are only possibilities.

The lamp for the generation of formaldehyde by the oxidation of methyl alcohol is also an effective method. This method of securing the gas is considerably cheaper than the preceding one—a pint and a half of wood or methyl alcohol, valued at twenty cents, being sufficient for the disinfection of a room having a space of one thousand cubic feet, whereas the expense of the pastille for this purpose is about seventy-five cents. Like the apparatus just described, the lamp can be purchased for a comparatively small sum, is easily manipulated, and is very satisfactory for house disinfection. However, it is practically subject to the same criticism—*i.e.*, that the process is comparatively slow, and the lamp remains in the apartment, and not under observation, until the disinfection is completed. In a structure subject to change of position, as a ship, it is not improbable that an accident might occur.

THE TREATMENT OF ECZEMA WITH PICRIC ACID.

In an article on this subject in the *Nouveau Montpellier Médical* for September, 1897, M. A. Brousse remarks that the kerato-plastic property of picric acid, which has been successfully used in burns, seems to indicate that its employment is proper in the treatment of eczema, certain forms of which present great analogies to superficial burns. In 1889, he says, Cerasi employed this drug in seven cases of eczema with excellent results. Dr. McLennan, of Glasgow, was also very successful in the treatment of acute eczema and eczema of the face with this drug, which he used in a saturated solution. The author himself has obtained rapid recovery in several cases in which he has employed this treatment, the histories of which are given in detail. In cases of lichenoid eczema with a thick epidermis the acid was useless, but in acute oozing eczema accompanied by edema of the skin it was very useful. Under its influence in one case recovery was obtained in two weeks; in another case, in ten days.

Among the advantages of this treatment are the immediate relief produced by the application of the picric acid solution and the disappearance of the pain, heat, and itching; the rapidity with which edematous tumefaction is effaced; and the absolute painlessness of the dressing, even when it is applied to the bare surface of the derma. According to the opinion of the most competent observers, the extensive application of this drug does not give rise to any symptoms of poisoning. Not only is it useful in acute eczema, but it is also useful in acute attacks

of chronic eczema which are so frequent in arthritics, particularly if they are accompanied by oozing and ulceration of the skin; it is equally useful in the seborrheic eczema of infancy. The author states that the results obtained by him with this treatment absolutely confirm those indicated in the publications of Dr. McLennan, M. Gaucher, and M. Leredde.

M. Brousse therefore concludes that this treatment is indicated as follows: (1) In acute eczema; (2) in the acute attacks of chronic eczema, particularly if there is a tendency to oozing and ulceration of the skin; (3) in the seborrheic eczema (impetiginous) of infancy. This treatment, he says, is contraindicated in chronic eczema and generally in all those forms of eczema which are accompanied by a thickening of the epidermis (lichenoid eczema). Nevertheless, it has the advantage, even in these cases, of allaying the itching.—*New York Medical Journal*, Oct. 16, 1897.

NOTES ON THE TREATMENT OF STATUS EPILEPTICUS.

L. Pierce Clark in *Pediatrics* of August 15, 1897, tells us that since the opening of the Craig Colony for admission of epileptics many cases of status epilepticus have occurred, but as yet no deaths have taken place from the same. Many remedies have been tried; chloral in large doses (forty to eighty grains) has been given, but little real benefit has been obtained from this drug even when it has been given alone and in very large doses. It is a powerful sedative upon the whole vascular system, and especially upon the heart. It cannot but be productive of great harm when given in very large doses, for at such times the heart is probably laboring under a heavier burden than it is ever called upon to bear in any other affection; therefore chloral should be given with extreme caution.

It is difficult to see how emetics can be of any value, offering as they do great hindrance to normal respiration. Occasionally drugs having this action have been administered, but they have been much more productive of harm than good.

Although chloroform is spoken of by many writers as being only "palliative," yet it can often be employed with great advantage if used with caution, and only at such times when the seizures are about to begin. It must never be given at the sleep or stupor stage, as at such times it may cause deep coma and even death. The so-called "palliative treatment" is frequently of the utmost importance; in fact, the palliative treatment is about the only one which is of any great service in treating status epilepticus, therefore chloroform should be tried in all obstinate cases. Morphine has proven of some value when used in conjunction with other drugs, but used singly it shows a very uncertain action in epilepsy, so much so that its benefit or failure in any particular case cannot be proven until it is tried.

Nitrite of amyl is a remedy often spoken of with great favor, but the writer has never seen a case in which its administration was a benefit; on the contrary, he has often seen it do positive harm, even provoking or prolonging an attack. From his experience its disuse cannot be too thoroughly recommended. He has seen epileptics who have been supplied with nitrite of amyl pearls or small vials of the drug, which the patients have been instructed to carry in their pockets in order that they might use it whenever an aura occurred. Frequently such cases are automatic and are almost certain to perform many semi-unconscious acts which they would not otherwise do were they in a normal state. While patients are in such a state the writer has seen them upon the point of swallowing enormous doses of the drug, which if a nurse had not prevented them from doing would have been productive of fatal consequences. Again, reasoning upon the physiological action of nitrite of amyl, its use would seem to be extremely limited in all epileptic conditions.

It is but fair to say here that in such an institution as the Craig Colony, where the proper food, exercise and hygienic surroundings are obtained, the manifestations of status in epilepsy are less severe and much more amenable to treatment than cases occurring in a physician's private practise.

The writer has not tried the various remedies recommended for status epilepticus without making some observations and experiments of his own. The prescription which will be given with this article has undergone various modifications from time to time, until it now seems to have become sufficiently crystallized to report for trial away from the Colony. No cases of status have occurred as yet at the Colony where it has not been possible to give this remedy by the mouth; indeed, all medication for status should be given at such times as the drug can be

taken by the mouth. To any one unacquainted with the conditions of status the writer cannot urge too strongly the great necessity of the very earliest treatment possible; half the terrors of status are removed when we recognize that it is a condition demanding immediate action. If the condition is cared for at an early moment the whole organism is in a fair condition to respond to the drugs which may be given; but if delayed, enormous doses of chloral bromide and morphine may be given without any result whatever. After treatment has been instituted by the prescription which is here given, almost all cases of epilepsy have had no seizures following its administration. In a few, two or three attacks have occurred for the first fifteen or twenty minutes after its administration, but no longer. The prescription is as follows:

℞ Tinct. opii deodoratæ, 5 minims;
Potassi bromidi, 25 grains;
Chloral, 20 grains;
Liq. morph. sulph., 1 drachm.
M. Sig.: One dose; repeat in two hours if necessary.

An explanation of the efficacy of this prescription might be hazarded on the following principle: The chloral and morphine are the first to act in their respective order, the chloral as a sedative upon the vascular system and especially upon the blood-supply in the brain; the morphine as a sedative on the nerve cell. Following their immediate combined action we get the slower and more permanent effects of the bromide and opium upon the cerebral centers.

TREATMENT OF BURNS.

MARIE B. WERNER in the *Polyclinic* of October 30, 1897, advocates the following treatment for burns, which is simple and appeals at once to the ordinary reasoning mind:

1. Place the burned member or surface in a carbolized bath of from two to five per cent., depending on the age of the patient and the extent of the injured surface. A threefold effect is gained by this—*i.e.*, antisepsis, asepsis, anesthesia.

2. Remove all the acid solution by a second bath in the physiologic saline solution.

3. Dust the entire surface with a powder containing acetanilid (one part) and compound zinc stearate (five parts).

4. Cover surface with narrow strips of Lister's green protective, or, if economy must be studied, thin gutta-percha tissue can be used instead.

5. Place wet sublimated gauze ten to twenty thicknesses over and around the surface, followed by ordinary bandaging.

The subsequent dressings differ only in one or two points from the first, as stated above. The carbolized bath is substituted by one of either the saline solution or a weak solution of mercury bichloride, followed by a spray of hydrogen dioxide which will aid in removing all the pus and loose dead tissues; after this, the surface is dusted with the powder, and protective strips, gauze and bandages are applied. These dressings are changed as often as needed, the extent and depth of the burn making its own rule, usually known by the amount of drainage and odor.

The advantages of this treatment over and above that of lotions, oils or salves are: freedom from any accumulation of fats with dead epithelium, encouragement of a healthy epithelial granulation under a clean moist dressing, the Lister protective serving in the double capacity of preserving the new epithelial cells and as a temporary integument.

Finally, and not least in importance, there being almost an entire absence of fibrous tissue, there is less danger of those unsightly deformities often due to the contracting cicatrix, which is also so often accountable for the sluggish circulation and nerve pains.

THE TREATMENT OF SPASM OF THE LARYNX IN INFANTS.

In the *Journal de Médecine de Paris* of October 24, 1897, VARIOT speaks of the various sedative medicaments which can be employed to quiet spasm of the glottis, and suggests that in the interval between the attacks a small teaspoonful of the following potion be given three times a day:

℞ Bromide of potassium, 15 grains;
Ether syrup, 6 drachms;
Syrup of orange flowers, 6 drachms;
Distilled water, 6 drachms.

Or the following may be employed:

℞ Musk, 2 grains;
Bromide of potassium, 15 grains;
Syrup of orange flowers,
Distilled water, of each 6 drachms.

At night a suppository may be inserted made up as follows:

℞ Extract of belladonna, ½ grain;
Solidified glycerin or cacao butter, 30 grains.

Night and morning it may be advisable to give the patient five drops of a mixture composed of seventy-five minims each of

aconite root and tincture of belladonna. This may be gradually increased until the patient takes twenty drops. In some cases it may be well to rub the patient's neck and chest with equal parts of lard and gray ointment. The general tendency of the treatment should be to improve the patient's nervous tone, and with this idea in view syrup of the iodide of iron or cod-liver oil are useful. Should the patient have any evidence of rachitis, and most children with spasm of the larynx suffer from this condition, remedies devoted to the relief of this state must be resorted to. Attention should also be paid to the teeth, and if the eruption of the teeth is difficult lancing should be employed. Where cases are particularly obstinate small doses of codeine, as for example one-quarter of a grain during twenty-four hours to an infant of a year, or one-half to one grain during this period to a child of three years, may be given. The best way of administering it is to place the codeine in a teaspoonful of coffee. The author concludes that codeine is a valuable agent in the treatment of this condition.

[Throughout the physician should always recollect that spasm of the glottis is not a disease but the result of rickets or some perverted condition of the general system. His therapeutics should, therefore, not be devoted to the administration of nervous sedatives which will give but temporary relief, but to the improvement of the general health of the patient, the careful regulation of the diet, avoiding all substances which will produce irritation of the digestive apparatus, and the relief of the attack of croup by applying hot cloths to the throat and chest or by the use of the hot bath. Very frequently an attack may be prevented by the careful regulation of the temperature of the room in which the child sleeps, and if the air of the room is moistened by some vapor given off from slaking lime or the boiling contents of a teakettle, both patient and nurse may have a comfortable night by avoiding the paroxysm. —ED.]

PULMONARY TUBERCULOSIS TREATED BY ICHTHYOL.

In *La France Médicale* of November 12, 1897, BRANTHONNE considers the value of ichthyol in old pulmonary tuberculosis and records a number of cases in which he has employed this treatment. His method of administration is as follows: A mixture of ichthyolate of ammonium two and a half drachms and of sixty-five-per-cent. alcohol six drachms is made, and thirty drops of this is given in a glass of water several times a day. The dose is gradually increased two drops a day until 150 drops are taken, when the ascending doses are stopped. In some cases the medicine may be given in pill form, the patient gradually going up to forty-five grains of ichthyol a day. The author of this article believes that the action of ichthyol in this case is similar to that of creosote, and quotes a number of German and French authorities who have resorted to it. The advantages of the treatment are that it does not irritate the stomach to the extent that creosote irritates it, that it diminishes the expectoration, improves the general sensations of the patient, causes an increase in weight, restores menstruation in women suffering from the disease, and altogether favorably modifies the *morale* of the patient.

THE TREATMENT OF ERYSIPELAS IN THE NEW-BORN BY ANTISTREPTOCOCCIC SERUM.

In *La France Médicale* of November 12, 1897, DAUCHEZ insists that in grave cases of erysipelas in new-born infants the prognosis is most unfavorable, and that active treatment is needed. Under these circumstances he believes that serum therapy may be of great value. In regard to statistics concerning this matter, he quotes those of Marmorek, who had forty-five cures out of forty-six cases of erysipelas which were injected with antistreptococcic serum; the forty-sixth case succumbed to an attack of pneumonia. To be sure, most of these cases were in adults. These results correspond to the conclusions of Dr. Chantemesse, who has collected statistics in regard to the results obtained by different methods of treatment of erysipelas. Thus in the classical symptomatic treatment of the disease so resorted to, out of 145 patients there were five deaths, or a mortality of 3.45 per cent.; with treatment by means of cold baths there were 409 patients with sixteen deaths, or a mortality of 3.90 per cent.—in other words, an average mortality of 3.79 per cent. On the other hand, when patients were treated by the antistreptococcic serum of Marmorek, there were 297 patients with five deaths, or a mortality of 1.70 per cent., the serum being 1:7000 strength. When the weaker serum was employed—namely, 1: 2000—there were 107 patients and seven deaths, or a mortality of 5.54 per cent. When the most

efficient serum was employed — namely, 1:30,000—there were ninety-seven patients and one death, or a mortality of 1.03 per cent., making an average of 2.59 per cent. These statistics demonstrate the necessity of avoiding the employment of the weaker serum.

Roger and Charrin have injected doses of five cubic centimeters into a cachectic infant of three weeks for the treatment of the erysipelas without any accident and obtained a cure in four days. The result which followed the injection of this serum was a constant, rapid and progressive lowering of the temperature. For the successful reduction of the temperature two doses of thirty cubic centimeters are usually necessary for the adult, while in children two doses of from five to ten cubic centimeters, according to age, are usually indicated. The temperature usually falls rapidly and progressively from this treatment, and the patient feels much improved. Its use also causes a diminution in the enlargement of any glands which may be swollen.

Gauchez then records the case of a male child who weighed eight pounds at birth and who at the time he came under treatment was six weeks old. He was nursed at the breast, but the mother was taken with a small abscess on the right side, furuncular in character, and the infant soon after developed suppuration about the umbilicus, which was treated by means of lotions and iodoform. Shortly after this the patient was seized with a convulsion; the rectal temperature became above normal; vomiting and finally high fever developed. No albumen, however, was found in the urine, which was passed in fair quantity. An examination at this time showed in the neighborhood of the groin on the right side a red swelling which speedily became erysipelatous in its appearance. There was also marked enlargement of the glands.

The treatment consisted in the injection of glycerin and hot bathing, and antipyrin and aconite internally. The next day the erysipelatous swelling had increased, and it continued to increase for the next week, at the end of which time the buttocks, limbs and even the feet were involved. Phlyctenular ulcers were also present. From the lower extremities the erysipelatous inflammation also extended to the trunk and shoulders. At the end of ten days the temperature was still high, the infant pallid and exceedingly feeble.

The treatment now consisted in the use of alcoholic stimulants, coffee, ether, peptone-wine, and injections of caffeine, with the object of supporting the patient. Nourishment was maintained by giving small quantities of the maternal milk or sterilized milk every two hours.

On the fifteenth day, in the morning, it was found that the patient was exceedingly ill, the pulse was irregular, and the local treatment consisted in applying resorcin with collodion. The temperature was also very high. At this time it was proposed to commence the treatment with Marmorek's serum, and an injection of three cubic centimeters of the serum was made into the left hypochondrium. Two hours afterwards the temperature had fallen about 2°, the erysipelatous area was paler, and had not extended at all. On the next day a second injection of five cubic centimeters of the serum was resorted to, and on that night a third injection of three cubic centimeters was given. These injections did not seem to cause the infant much pain. On the following day the fourth injection of four cubic centimeters was used. The general condition had now markedly improved. The child had an excellent night, and in every way seemed much better. Three hours after the injection of the serum the temperature approached normal. The pulse became less intermittent. On the next day a fifth injection of four cubic centimeters was given, and the day following still another one was resorted to. Notwithstanding these improvements four days after the injection had been taken the patient had a turn for the worse, refused to take nourishment, and finally died. No albumen was found in the urine during the course of the attack.

The author then asks to what cause the lack of success is due in this case, and considers that the excessive violence of the disease and the extreme youthfulness of the patient, combined with the excessive temperature, are the principal factors in having brought about the fatal result.

THE TREATMENT OF EXCESSIVE SWEATING.

An article upon this subject is published by GAUCHER in the *Journal des Praticiens* of October 23, 1897. He states that in general hyperidrosis the best remedies in his opinion for internal administration are tannin, agaricin, phosphate of lime, and atropine. These remedies produce good results in symptomatic sweating, but they are without effect in

idiopathic hyperidrosis. In the latter condition and in symptomatic sweating, also, the administration of tonics such as iron and quinine is very useful. In nervous patients some of the antispasmodics may be employed, such as the bromide of potassium or the valerianate of ammonium, or the extract of valerian, given in continuous doses over a considerable period of time. Among the local measures which are useful we find that vinegar or alcoholic lotions, frequently repeated, or hydrotherapy with the use of cold, are the best measures of relief. In the way of astringent lotions we may employ solutions of lime, tannin, borax, or acetate of lead in any one of the following forms:

℞ Tannin, 15 grains;
Alcohol, 7 ounces.

℞ Alum, 150 grains;
Water, 8 ounces.

℞ Borax, 150 grains;
Water, 8 ounces.

℞ Liquor plumbi subacetatis, 3 drachms;
Water, 8 ounces.

Where the sweating is confined to local areas, as in sweating of the feet, foot-baths extending over a period of as long as one-half to one hour are more efficacious than lotions, and a decoction of oak bark, or oak leaves, in which is dissolved five drachms of borax in each quart, may be used as a foot-bath. After the lotions or the baths the sweating part may be dusted with the following powder:

℞ Finely powdered chalk, 3 ounces;
Salicylic acid, 30 to 45 grains.

Where sweating of the feet is troublesome, it is well to separate the toes by a small piece of lint in order to prevent maceration of the cutaneous surfaces. In some obstinate cases the application of a continuous current of electricity to the part which is involved does good. In those cases of excessive sweating in which there is also a marked odor, constituting the condition known as bromidrosis, the best treatment consists in alcoholic lotions, such as we have already named, and in addition the employment of some aromatic substance; thus bathing the feet with a solution made up of five drachms of borax to the liter of alcohol, to which is added a tablespoonful of tincture of benzoin, is useful. In other cases a one- to two-per-cent. solution of potassium permanganate or a weak solution of chloride of iron may be employed. The great inconvenience of these latter two methods is that the skin is stained. In other instances a five-per-cent. alcoholic solution of naphthol, to which has been added a minute quantity of glycerin, may be applied to the feet. After these lotions have been used the part should be powdered with a mixture of talc and salicylic acid.

THE ABSORPTION OF IRON AND ITS HYPODERMIC ADMINISTRATION.

LEPINE (*La Semaine Médicale*, May 26, 1897) reviews the progress of knowledge since Kobert and Bunge sought to prove in 1892 that inorganic salts of iron were not absorbed by the intestines. Kunkel has shown that after taking the inorganic salts by the mouth the percentage of iron rises in the whole body, especially in the liver. Since then iron has been repeatedly seen in microscopic sections on its way through the intestinal wall, and its eventual recovery in the feces of healthy animals has been explained. Thus Jacoby found that in animals, after hypodermic or intravenous injections of iron, very little is passed in the urine, while the greater part accumulates in the liver to be eliminated later by the intestinal mucous membrane, and probably to a less extent by the bile. Absorption from the intestine has therefore been proved. But the cases where the stomach is intolerant of iron are the very ones where it is most necessary. In these it must be given hypodermically. The latest researches show that the citrate of iron is as good as, if not superior to, any other preparation for the purpose. It appears in the urine half an hour after the injection, and is present for twenty-four hours, the maximum excretion taking place two to four hours after.

Gloevecke and others have had good results by injecting a ten-per-cent. solution into the buttocks or muscles of the back, using one cubic centimeter at a time. The injection causes a sharp pain which lasts for some time, but Lepine finds that by using more (2.5 cubic centimeters) of a weaker solution (four per cent.), this inconvenience disappears, and there is only slight tenderness. He relates a striking case of a woman, aged forty, who grew steadily worse with the usual treatment, including feeding with bone-marrow, until the hemoglobin fell to less than one-sixth of the normal, and she appeared at the point of death. Hypodermic injections of three to four cubic centimeters of the four-per-cent. solution were followed immediately by a marked improvement. Delirium ceased the day after the first injection,

and, though previously nothing was retained, four egg-flips were kept down. She had recovered a month later. In spite of the dose being in excess of that usually recommended, no bad effects were noted. There was polyuria, but no albumen. However, the common toxic symptoms produced by large doses of iron taken by the mouth, such as constipation, or sometimes diarrhea, nausea, and abdominal pain, are much more frequent after hypodermic injections. Thus a little over three grammes of the citrate when injected has produced vomiting, fever, and malaise, lasting several hours. Great caution is required if the kidneys are unsound, since even if they are healthy too concentrated injections may lead not only to the usual harmless polyuria, but to anuria and even hematuria and nephritis. The treatment is altogether contraindicated in anemic patients suffering from hepatic cirrhosis, epistaxis, hemorrhoids, metrorrhagia, etc., since it predisposes to hemorrhages. — *British Medical Journal.*

ON THE VALUE OF ARSENIC AND BELLADONNA IN THE TREATMENT OF CHOREA.

In a recent issue of the London *Lancet* OVEREND concludes an article on this topic in the following summary:

1. Belladonna appears to be most beneficial in recent cases, and its influence is sometimes very marked in severe forms.

2. In obviously rheumatic cases arsenic in large doses may be given a trial or may be combined with belladonna from the first. Belladonna may act by diminishing the excitability of the nerve centers or by imparting an improved tone to their vascular supply.

3. In the wards of a hospital it is perfectly justifiable to give to a child as much as thirty minims or more of the tincture of belladonna every four hours for ten days or even longer. Certain precautions are necessary. The patient should be kept in bed and the urine should be daily measured. Small doses of potassium acetate may be added if it becomes much diminished or if the eyelids show any puffiness. In one child nocturnal incontinence occurred, and the dose was lessened. The occurrence of the papular erythema, which leaves raised circular lumps for a time, does not necessitate any diminution of the dose. Dryness of the throat and swelling of the parotids, should they occur, are merely temporary. The influence of the belladonna makes itself felt after about four days. Should no visible improvement occur before the tenth day it would be useless to continue with it. But in eight severe cases treated belladonna was of benefit, and is certainly worthy of further trial. As soon as the movements become trivial or occur only during exertion, it is better to omit the belladonna, to commence massage of the affected muscles, and administer cod-liver oil and syrup of phosphate of iron or other tonics. The arsenic may be continued for a week or longer.

FURTHER OBSERVATIONS ON THE USE OF HYDROGEN DIOXIDE IN THE TREATMENT OF BLEPHARITIS MARGINALIS.

Dr. AYRES, the well known ophthalmologist of Cincinnati, records his experience with this substance in the *Lancet-Clinic* of October 23, 1897. Nearly four years ago the author published in the *Medical News*, of Philadelphia, a short article on the use of hydrogen dioxide in the treatment of blepharitis marginalis. He had then been using the remedy about a year in private and clinical practise, so that he can now say he has been using it constantly for five years, a period quite long enough to test its merits. His first impressions as to its value in this disease have not been disappointing; on the contrary, his expectations have been more than realized.

The author does not go into a discussion of the disease itself, but makes a few statements preliminary to what he has to say about its treatment. It is a well established fact that blepharitis is frequently associated with errors of refraction, hence it is necessary in all such cases to determine the degree of ametropia and correct it with suitable glasses. This should be the first step in every case, for two reasons: First, to relieve the asthenopia; and second, to assist by proper correcting lenses in the cure of the blepharitis. Very often there is no true asthenopia, only a burning sensation along the margin of the eyelids; but in these cases the refraction test should be made, and if even a slight error is developed it should be corrected. The correction of the ametropia will in itself help to cure the blepharitis.

Blepharitis assumes different types in different individuals. In some it is like a little dry scurf, which forms around the ciliæ and causes but slight irritation; in others there are deep ulcers around the hair-bulbs, which

are painful. Again, it is like an eczema which forms on the edges of the eyelids, causing hairy crusts, which cover half the length of the ciliæ and mat them together. In the more severe types there is always more or less associated conjunctivitis. The disease is more frequently seen among the young, and especially among the strumous. In persons with fair hair and light complexion we see the most intractable cases.

If the disease be allowed to run its course unchecked there will be a gradual destruction and atrophy of the hair-bulbs from ulceration. Straggling and feeble hairs in some cases will grow out and curl down in contact with the cornea, exciting ulceration. In the inveterate cases there finally come loss of the ciliæ, thickening and redness of the edge of the lids, and ectropion.

Many remedies have been used in the treatment of this disease, and with success. The mercurial ointments have long been used, and are well adapted to some, but very irritating to others. Diachylon and zinc ointments are recommended. Silver nitrate and copper sulphate are used to touch the ulcers on the lid margins, and serve a very good purpose. As this is a disease which must be treated more at home than at the office, we want a remedy which can be readily used at home and which will aid us in quickly softening and easily removing the crusts and scales from the edges of the lids. Mothers and nurses at home are entrusted with the most important part of the treatment, and they find it a difficult, and sometimes an almost impossible, task to treat the struggling and rebellious children properly. The screams of the children deter them from carrying out instructions, which they are quite willing to execute.

Water, pure or rendered alkaline by the addition of bicarbonate of soda, will in time soften the crusts, but in the hydrogen dioxide we have a remedy which, by its chemic action, unites with and softens and dissolves the crusts.

There is no need to dwell upon the great value of H_2O_2 as a disinfectant and antiseptic. Every one is quite familiar with its effects on pus and micro-pus virus and albuminoids generally. It has established a wide-spread reputation for efficiency on account of its many good and few objectionable features. It is neither toxic nor corrosive, as are carbolic acid and bichloride of mercury. It acts by oxidation. It does its work quietly and painlessly. It converts pus and virus into inert matter. It cleanses diseased surfaces as thoroughly as would the stronger preparations, and yet is as harmless as aqua pura. Its effects recommend it especially in the treatment of the eye. At first the author used it in its ordinary strength, about twelve volumes, but he soon found this objectionable, for if by accident a drop came in contact with the conjunctiva it caused a sharp pain for a short time. He then reduced it about half with water, and found this accomplished the desired result and did not pain the eye. He applies it with a bit of absorbent cotton, which is dipped into the dioxide and rubbed along the lashes. This should be kept up until the specific oxidizing effect is seen on the scales or crusts, as will be evidenced by the bubbles.

The advantage of the dioxide is that it has a softening effect on crusts along the edge of the eyelid which water does not have. Applied in the strength the writer has directed, there will soon be seen the specific action of the medicine. A white line of bubbles will be seen along the edge and the crusts will seem to swell. Keep this up for a short time and the edges of the crusts will begin to separate. Then rub the lids dry with absorbent cotton and they will become partly detached. If they should prove to be very hard and dry, the dioxide will have to be used longer, allowing it more time to soak in. Then with a dressing probe or a scoop they can be lifted out without causing pain. Water will not accomplish this so easily and so quickly, as it does not so readily unite with or dissolve them.

There is a great advantage in using this remedy in children, for it greatly lessens the pain of the treatment. After being soaked the crusts can often be brushed off with a small bit of dry absorbent cotton.

In mild cases the peroxide will give more relief than any other remedy in the author's experience. In the severe cases with ulcerations of the margins of the lids and deep pits under the scabs, the peroxide has to be supplemented by the use of a solution of silver nitrate. This is applied to the ulcers on a cotton probe made by wrapping a small bit of cotton around a wooden toothpick. It is dipped into a two-per-cent. solution of silver nitrate and then pressed into the pits until the surface turns white. This must be repeated twice a day until the ulcers fill up, and then can be discontinued.

The author frequently finds cases where ointments of all kinds produce more or less

irritation, and sometimes cause an aggravation of the symptoms. In these cases the dioxide answers very well. The writer does not claim that it is a remedy which can or should be used alone. In mild cases it will accomplish all that any other remedy can. In the severe cases the ulceration of the lid margins should be treated by nitrate of silver or other remedies. Trimming of the lashes in children should be resorted to, especially where the crusts accumulate rapidly and are not properly removed by the parents at home.

The dioxide will always be a valuable adjunct to other rational measures which are resorted to for the relief of this obstinate disease. He has also found it very valuable in the treatment of the moist eczema which forms around the alæ nasi and behind the ears in strumous children. It destroys the pus, softens the scabs, and renders them easy of removal.

THE MODERN MANAGEMENT OF DIPHTHERIA AND CROUP CASES.

AUGUSTUS CAILLÉ in the *Post-Graduate* for October, 1897, gives valuable advice as to the treatment of diphtheria. After stating that the proper management of the nasopharynx in children and adults is one of the most important subjects in practical medicine, he goes on to say that the nasopharynx is the usual site of entrance of diphtheria, and to this locality the preventive measures must be directed. In a contribution to the proceedings of the New York Academy of Medicine in 1884, the writer showed that chronic nasal catarrh, adenoid vegetations, enlarged tonsils and carious teeth favor diphtheria infection, and that in the absence of such conditions the instillation of a weak salt or alkaline solution into the nose morning and evening will prevent diphtheria in those exposed or prone to contract it.

The general practitioner should see to it that in all children coming under his professional care, adenoids, if present, be removed by the post-nasal forceps and Gottstein's curette, that hypertrophic tonsils be resected, and carious temporary teeth be filled or extracted.

The nasopharyngeal toilet, as advised by the author, consists in the instillation into each nostril by means of an ordinary teaspoon a spoonful of salt water one-per-cent., or boric acid water two-per-cent., morning and evening (at bedtime and on rising), as the children lie on their backs, with nose tilted up and mouth open. The liquid does not wash through at once; some of it remains in the various recesses of the nasal cavity, and is eventually sneezed out or swallowed. In this way putrescible matter and bacteria are washed away (mechanical antisepsis). Where additional chemical antiseptic action is desired a 1:5000 mercuric bichloride solution, or Labarraque's solution ten-per-cent., or a rose-colored permanganate of potassium solution, should be employed.

The nasopharyngeal toilet, carried out in the way described, is indicated for (1) all healthy children from one year up, who live in infected localities, and (2) for all healthy children directly exposed to diphtheria infection.

It is also the best method of local treatment in all cases of diphtheria, in which instances it should be resorted to every two hours; moreover, it is the most satisfactory local routine treatment in all cases in which diphtheria frequently sets in as a complication, *e.g.*, in scarlatina, measles, and pertussis; furthermore, it is a necessity before and after tonsillotomy and all operations on the nose and throat. This method is far superior to gargling, and the writer, after an experience of more than fifteen years with its use, again takes pleasure in recommending it on account of its great value and harmlessness. It has been tested in private practise and in institutions; many physicians have employed it; bacteriologists have reported upon its usefulness, and have shown that weak solutions are as efficacious as strong ones.

In many forms of reflex cough, also of tubercular origin, it is far superior to nauseating expectorant mixtures, and in all forms of febrile disease in which the nasal secretion becomes dry, crusty, or hardened, half a teaspoonful of salt water into each nostril affords much relief.

The nasopharyngeal toilet not alone does not provoke middle-ear accessory sinus complications, but according to the experience of the writer apparently prevents them.

Specific and direct immunity is secured for those exposed to diphtheria by means of antitoxin. The period of immunity varies from three to six weeks, which is sufficient for all practical purposes in times of epidemics or house infection. Aside from the reports which come to us from abroad, we have reliable reports from various hospitals for the treatment of children's diseases throughout

the country which go to prove the absolute value of antitoxin as an immunizing agent. The immunizing dose is 200 units, and all exposed children should receive this quantity.

Antitoxin; Dosage; Indications.—The treatment for diphtheritic inflammation consists in the early and proper administration of reliable antitoxin, supplemented by the nasopharyngeal toilet. The time for discussing the *pros* and *cons* of antitoxin treatment is past; the specific curative power of this remedial agent is an established fact. Behring's claim that if antitoxin be used early the mortality from diphtheria will not exceed five per cent. is borne out by the reports of competent clinicians all the world over. Opposition to anything so radically new as Behring's discovery is one of the associating features in the evolution of scientific medicine. Vaccination and antiseptic surgery stand in evidence of this fact. *Any practitioner who studies the collective investigation reports for 1896 and 1897, on antitoxin for diphtheria and croup in private practise, issued by the American Pediatric Society, and fails to use antitoxin because he "does not believe in it," should not be entrusted with the management of a case of diphtheria, and the practitioner who thinks a case is mild, and waits for severe symptoms before using antitoxin, utterly fails to grasp the situation, and will frequently be disappointed.* [Italics ours.—ED.]

Antitoxin is indicated in doses of 200 units for immunizing exposed persons, and in doses of from 1000 to 2000 units to combat the disease: 1000 units for very young children; 1500 units for older children; 2000 units in croup cases. It should be employed at the earliest possible moment, and the dose repeated the following day and subsequently as often as is necessary. The author has given 10,000 units in one week to a child nine months old, and has seen no ill results. The dosage is expressed in units, and not in the serum quantity; the preparation having the highest number of units in the least quantity of serum, and from an absolutely reliable source, is to be preferred.

The injections are made in any region where a fold of skin can be picked up—the skin, the hands of the physician and the syringe must be clean. Any syringe will answer, but the best syringe is one made entirely of glass, and now obtainable in the shops.

The writer also injects a curative dose of antitoxin in every case of scarlet fever coming under his notice, because this disease is frequently complicated with diphtheria, and he also administers a curative dose in case of measles and whooping-cough if the throat shows the slightest appearance of a pseudomembranous patch. It would appear rational to give an immunizing dose in puerperal cases, where a diphtheria case exists in the same house; also to children on whom an operation is to be done in the nose or throat, and where the culture test shows the presence of diphtheria bacilli without clinical symptoms. Antitoxin is also indicated in diphtheria of the eye, which is fortunately very rare. The more common croupous conjunctivitis is not to be confounded with eye diphtheria, in which the eyelids are phlegmonous and hard.

The antitoxin rash, which is noticed in a certain number of cases, has no very characteristic features and may readily be mistaken for scarlet fever or measles rash; its appearance is usually not heralded by a rise of temperature and increase of other symptoms.

As regards the combined use of antistreptococcic and antidiphtheritic serums in cases of mixed infection, no positive advice can be formulated at the present time.

The local treatment of diphtheria must be mild. Swabbing the throat in diphtheria is harmful, and should not be practised. Solutions used as gargles do not reach the nasopharynx; the spray is only to be employed in cases in which force need not be used, *e.g.*, in docile children. The best way to cleanse the nasopharynx is to pour the liquid into the nose from a spoon; if the nose is partly or almost completely stopped up, a blunt piston syringe, or a Davidson's or fountain syringe, must be employed. In septic cases the irrigation is best done as the children lie on the side, in order to avoid any sudden strain and collapse. For the majority of cases, instillation by means of a spoon will suffice. This may be done every hour or two and if necessary day and night, according to the severity of the case. If syringes are used the stream should be directed horizontally, and not upward. Syringes should not be used if bleeding follows each irrigation.

The following liquids may be employed: Permanganate of potash (rose-colored aqueous solution); mercuric bichloride in water, 1:10,000; salt water, teaspoonful to pint; lime water; alum water, five-per-cent.; Labarraque's solution in water, 1 to 20.

Peroxide of hydrogen has shown itself to be an active irritant in the hands of the

author, and aids the spread of diphtheria, and should therefore not be used in that disease.

Any of the above liquids may be used as a gargle when children are able to gargle. Excoriations at the angles of the mouth and at the nostrils usually heal under camphor ice.

Antitoxin, with mild local treatment and judicious stimulation, will suffice for ordinary cases seen in good time; but as cases will come under observation in which valuable time has been lost in temporizing with household remedies, the physician will not be spared the management of various complications which will now engage our attention.

The local antiseptic power of a teaspoonful of medicine, as it glides over the tongue and down the esophagus, is practically *nil*. The yellow chlorate of potassium and iron mixture, and the mercuric bichloride mixture, will not be necessary where antitoxin can be had, and should under no circumstances be given to a patient with an irritable stomach. As an aid to digestion the following mixture is efficacious:

℞ Liquid pepsin, 2 ounces;
Acid. muriat. dilut., ½ drachm.
Teaspoonful four times a day.

In septic cases, five drops of the tincture of chloride of iron may be given every four hours.

Stimulants should be given as follows: Whiskey, American tokay wine, champagne, coffee, strychnine $\frac{1}{60}$ grain, three times a day; camphor, one-half to one grain, three times a day; benzoate of sodium and caffeine, dose one to three grains, also subcutaneously dissolved in water; camphorated oil and ether, equal parts, five to fifteen drops subcutaneously. When the stomach is irritable, stimulating drugs can be given subcutaneously or per rectum.

High temperature can be reduced by cold and lukewarm sponge and tub baths. To give an antipyretic drug regularly every two to three hours is very bad practise; one or two doses in twenty-four hours, particularly at night, are serviceable. From three to ten grains of phenacetine with half a grain of caffeine or lactophenin with caffeine in the same dose may be given. Antipyrin is a safe antipyretic, and as it is soluble in water, from three to seven grains can be given per rectum. In cerebral unrest an ice-cap is advisable. Quinine should never be given as an antipyretic in any but malarial disease.

In cases of incessant vomiting, stop all internal medication and give only one to two drops tincture of iodine in sweetened peppermint water every hour or two, or wash out the stomach.

In many septic conditions a mild form of diarrhea may complicate matters. This can usually be checked, if necessary, by a diet of burnt flour gruel or corn-starch pap, and by omitting milk food for a time. Should this not suffice, five grains of tannic acid or tanningen given with chocolate, or half a grain of acetate of lead with sugar of milk, or half a grain of camphor with one-fifth grain of Dover's powder, will check the diarrhea.

Albuminuria and nephritis are frequent complications of diphtheria. A stiff dose of calomel and jalap, and one or two warm baths a day to promote diaphoresis, will be the treatment in such conditions. In nephritis, with dropsy as a sequela of diphtheria, an infusion of digitalis may act as a diuretic by improving the circulation.

Initial convulsions indicate intense infection or nervous reflex irritability, for which an enema, a warm bath, and three grains hydrate of chloral and five grains potassium bromide are indicated, per os or per rectum. Terminal convulsions, indicating heart failure and cerebral inanition, give an unfavorable prognosis. A warm bath and stimulants are here indicated — five drops of camphorated oil and five drops of ether subcutaneously every few hours.

The tongue is sometimes so hard and dry that pain and difficulty in swallowing result. For this condition glycerin and rose water, equal parts, applied with a brush, affords relief.

Pseudo-membranous conjunctivitis is occasionally seen in severe diphtheria cases. This readily yields to ice compresses and the boric acid spray. In true diphtheria of the eye, in which the eyelids are much swollen and indurated, antitoxin must be used in large dose. Fortunately, as has already been said, this condition is very rare.

Otitis media, due to an extension of the septic process through the Eustachian tube, is frequently observed, but the earache is not nearly as intense as in ordinary otitis media, and rupture of the drumhead takes place readily. The ear should be cleansed with mercuric bichloride solution 1:5000, or a warm boric acid solution with cocaine, or menthol in sweet almond oil (one to four drachms) should be instilled.

Hemorrhage from sloughing of the tissues

is a very dangerous and distressing complication. If possible, the bleeding spot should be located by means of a strong light, and directly cauterized with the actual cautery, lunar caustic, chloride of zinc, alum solution, or antipyrin and tannin. The styptic preparations are not so applicable on account of the large grumous blood-clots which invariably form.

Phlegmon and induration of the tissues of the neck, with indistinct fluctuation of cervical lymph nodes, are best managed by a large incision through the entire dense and thick skin down to the glands. The latter are usually in a friable, spongy state, with little pus spots scattered through the tissue, and can readily be broken up by pushing a blunt director or dressing forceps through the capsule and sweeping it around in various directions in order to break up the necrotic tissue. Make one abscess cavity, which can readily be drained by means of iodoform or bichloride gauze under a moist dressing. The neighborhood of such a diphtheritic and gangrenous wound occasionally has an erysipelatous appearance, which usually subsides under the application of cold lead lotion.

The diet should consist of the following: Milk, vichy, matzoon, kumiss, beef peptonoids, corn-starch, custard, ice-water, cream, farina, cocoa, eggs, raw meat, burnt flour, soup, whiskey, California tokay, coffee, tea, punch, ice, champagne, pineapple juice, somatose.

The diet in diphtheria is of prime importance; the food should be nutritious and digestible.

Forced feeding is proper in exceptional cases, but it is well to remember that children with febrile and septic diseases have little desire for food, and that the stomach will resent all attempts at overfeeding. Somatose is an ideal soluble meat without taste or smell, and can be given with cocoa, milk, gruel, rice, etc.

For rectal alimentation inject a mixture of whiskey, egg yolk, beef peptonoids, warm water.

THE TREATMENT OF CARDIAC AFFECTIONS DEPENDENT UPON ARTERIOSCLEROSIS.

In the *Journal des Praticiens* the following treatment for this condition is given:

The diet is carefully regulated and small quantities of meat are administered. In regard to vegetables, potatoes are to be avoided and green vegetables to be employed. In regard to medicinal treatment the following potion may be employed for the purpose of increasing elimination of calcareous material: Bicarbonate of sodium 2½ drachms; neutralize this with a sufficient quantity of lactic acid and add lactic acid and simple syrup 2½ drachms, and distilled water 6 ounces. Take this quantity during a period of twenty-four hours. It is stated that the lactic acid will augment the elimination of calcareous materials and increase the quantity of the urine, and that under this treatment the patient will be relieved to a great extent of symptoms of cardiac dilatation or asthenia, his dyspnea, cyanosis, edema, and attacks of angina.

THE ABORTIVE TREATMENT OF INFLUENZA BY CALOMEL.

In the *Therapeutische Monatshefte* for October, 1897, FRUDENTHAL expresses the belief that calomel is an exceedingly useful drug in the early stages of an attack of influenza. The dose which he gives amounts to two grains twice a day to adults, or one grain three or four times a day. In infants smaller doses are given according to age. He asserts that the effects of this treatment are remarkable. In a few hours he obtains a great fall of temperature and the disappearance of the neuralgic pains and loss of appetite. The advantage of this treatment he thinks is that it is inoffensive, and admits of general employment. He believes that a cure can usually be produced by the third day.

SUCCESSFUL TREATMENT OF CIRCUMSCRIBED TRAUMATIC ANEURISM OF THE RIGHT INTERNAL CAROTID ARTERY WITHIN THE CRANIUM BY MEANS OF LIGATURE OF THE COMMON CAROTID.

HINDE (*Journal of the American Medical Association*, December 4, 1897) has reported the case of a Chinaman, thirty-six years old, who eighteen months before coming under observation had been felled to the sidewalk by a blow upon the shoulder, striking the occiput in his fall. The man at once arose and walked home, a distance of a block, and lay down for about ten minutes. On the following day he felt well enough to resume his work. Some time afterward both eyes began to redden, the right one in greater degree, and in a short time it was noticed that the right eyeball commenced to bulge forward. The redness and the exophthalmus

on the right side steadily increased until the patient came under observation, when the palpebral, conjunctival, subconjunctival and anterior ciliary veins of the right eye were found to be greatly enlarged and tortuous. No pulsation could, however, be detected in any of these vessels, and none on light palpation with the finger-tips applied to the eyeball. The motility of the globe was preserved, except that in attempts at abduction it halted at a point slightly beyond the mid-position. The reflexes of the right pupil were enfeebled. The ophthalmoscope disclosed enlargement and tortuosity of the retinal veins, but an absence of pulsation. The arteries were of normal size and course. Both arteries and veins, especially on the surface of the disk, were marked by white lines along their walls, indicative of perivasculitis. Disk, retina and choroid were normal in appearance. The veins of the left eye were somewhat enlarged throughout, but presented otherwise nothing abnormal. The sensibility of the right cornea was less acute than that of the left. The visual fields were alike and normal. The acuity of vision was slightly greater on the left than on the right, but fairly good on both sides. On placing the cup of a stethoscope over the closed right eye, a loud blowing bruit or murmur was heard synchronous with the heart beat, and an intermittence of the heart's pulsation from six to eight times per minute was readily detected. The same conditions, in slighter degree, were present over the right temporal region, and in still slighter degree in the left temporal region. In all of these situations the aneurismal sound was greatly increased when the patient stooped forward. It disappeared completely on digital compression of the right common carotid artery in the neck. On further inquiry it was learned that the patient became conscious of a noise in the head some six or seven days after his fall, and that it had grown steadily louder. The conclusion was reached that an aneurism had formed on the internal carotid artery within the cranium, perhaps secondary to fracture of one of the bones at the base, at a point where the vessel passes on the side of the body of the sphenoid bone between the layers of the dura mater and in immediate proximity to the cavernous sinus; compressing the latter and preventing the return of the venous blood from the contents of the right orbit, but not affecting the arterial supply; compressing the trunk of the sixth nerve, and in slighter degree also the ophthalmic division of the fifth nerve. To remove the possibility of syphiloma of the brain, large doses of potassium iodide were administered for six weeks, without improvement. Operation was therefore advised, and it having been agreed to, the right common carotid artery was occluded in the neck with two ligatures, one-half inch apart. The immediate result of the operation was a complete cessation of the bruit, with increase in the exophthalmus, which, however, subsequently receded. Under treatment with the faradic current the paresis of the right external rectus muscle and diplopia that had developed were greatly improved. The ultimate result was entirely satisfactory, the patient being freed from all his previous symptoms.—*Medical Record*, Dec. 18, 1897.

ON THE USE OF THE GIGLI WIRE SAW TO OBTAIN ACCESS TO THE BRAIN.

According to KEEN (*Philadelphia Medical Journal*, Jan. 1, 1898) the Gigli saw has the following distinct advantages: It is simple in construction, consisting of a bit of roughened steel wire about 35 centimeters long and about 0.5 millimeters or more in diameter, with a loop at each end. Both the diameter and length vary somewhat in different sizes.

The method of using the saw is by making two or more trephine openings; then, after separating the dura from the skull, a piece of silk is passed through by means of a probe, and by the silk the saw is drawn under the skull. The handles are then attached, and by moving the saw back and forth just like the old chain saw, the skull is cut through.

In a case operated upon by the writer in sawing three sides of the osteoplastic flap, he was able at will to bevel the edge in such a way that when the flap was replaced it would not sink into the cavity of the skull and press on the brain, even though along the middle line he was obliged to gnaw away the bone at each end. By leaving one centimeter of the beveled surface in the middle, or indeed at any point, the bone is supported perfectly well. There is practically no loss of bony tissue, as the saw is so thin.

Another advantage claimed is that when the operator had completely sawed through three sides of the quadrilateral osteoplastic flap which he wished to turn down, the skull being very thick, it would have been somewhat difficult to break the bone along the fourth side, and the edges of the bone would have been very irregular and with short

spicules attached. These, if care is not taken, might prove a source of trouble to the dura when the bone was replaced. By passing the Gigli saw under the inner surface through the two openings, he was able at the base to saw half through the thickness of the skull from the inside and then break the outer table with but little exertion and a quite regular fracture.

The saw avoids the jarring of the skull caused by the hammer when the chisel is used. This is a theoretical rather than a practical advantage. The chisel has been used in a good many cases now, and no case of injury resulted from concussion of the hammer.

When one of the Gigli saws has been used it curls up and is useless. Besides this, the roughened points have been so worn away that if the skull was very thick it would probably require a second saw. One of the saws broke when the writer had been using it some little time, but all that was necessary was to withdraw the broken ends and use a new saw.

There was some anxiety while cutting the long side of the quadrilateral lest the saw, as it made the chord of an arc, the arc being the curved under surface of the skull, might cut into, or otherwise injure, the dura mater. Much gratification was felt when the flap was turned down to see that not the slightest injury had been inflicted upon the dura.

THE CONSERVATIVE SURGICAL TREATMENT OF UTERINE FIBROIDS.

MONTGOMERY in the *International Journal of Surgery* for January, 1898, states that hysterectomy, vaginal or abdominal, may justly be considered conservative when performed for conditions which must otherwise imperil life or health; but in this paper he uses the term in a higher sense—the conservation of function in organs which are crippled unless treated, and which have until recently been regarded as conditions justifying their sacrifice.

There are, however, many cases with extensive fibroid formations, in which by the exercise of care the growths can be removed, leaving a severely lacerated organ, which with proper management may be restored to a functionating organ capable of affording hope for, if not actual, future progeny.

The growths may be attacked either through the vagina or by way of the abdomen.

The truly conservative procedures *per vaginam* are:

1. Dilatation and curettement of the uterine canal.
2. Splitting of the cervix.
3. Incision of the tumor capsule.
4. Removal of the tumor after twisting or cutting its pedicle.
5. Arrest of blood-supply by ligation of vessels.
6. Enucleation.
7. Morcellation.

The first three procedures, unless a part of a general plan, are merely palliative. Dilatation of the cervix by laminaria tents affords an opportunity for digital exploration of the cavity and the determination of the size, situation and relation of intramural and interstitial growths. By decreasing the resistance of the cervix it promotes the more rapid extrusion of the tumor. The same effect to a more marked degree is accomplished by splitting the cervix. This is not applicable for a tentative procedure, unless the growth is already making pressure upon, and has partially taken up, the uterine neck.

The influence of curettement is confined to its palliative effect in the arrest of hemorrhage. For this purpose it is especially valuable, and produces such changes in the diseased uterine mucosa that hemorrhage may be kept in abeyance for a considerable period. It should not be employed when the tumor is a polypus, merely attached by a pedicle. Such cases should be treated by division of the pedicle through torsion or incision and delivery of the growth. This plan of treatment is preferable whenever the pedunculated growth can be reached after dilatation or splitting of the cervix. The growth should be seized by strong, preferably four-pronged, vulsella, and rotated two or three times until its pedicle is torn off, when the delivery can be accomplished by traction. The latter should not be employed until it is certain the pedicle is loosened, otherwise inversion might readily be produced.

Incision of the tumor capsule and partial enucleation of the growth is of particular advantage in controlling hemorrhage. The divided vessels retract and become occluded by clots.

It facilitates the extrusion and conversion of interstitial or mural growths into the intramural. The resistance of the tissue intervening between the growth and the uterine cavity is withdrawn, and in some cases the extrusion is rapid.

It is not absolutely free from danger; the premature removal of resistance may cause so rapid extrusion that the blood-supply is arrested, and it becomes a sloughing fibroid, greatly increasing the danger to the patient.

Cutting off the blood-supply by ligation of the uterine arteries was advocated in 1890 and first performed by Martin in 1892. As done by Martin, it is not only a ligation of the uterine arteries, but the whole base of the broad ligament is secured in order to occlude not only the main channel of the uterine artery, but its collateral branches. In very vascular growths, he also burrows up and secures the ovarian artery upon one side. Naturally the best criterion of the value of any procedure is determined by practical experience. In thirteen cases reported by Martin, upon whom the operation had been done more than a year, the tumor entirely disappeared in several; in others it decreased in size; while in three the hemorrhage was but slightly improved.

The advantages of the procedure are that it can be done without opening the peritoneal cavity and thus subjecting the patient to a dangerous operation. The absence of an external incision and the slight peril of the operation render it more acceptable to the patient.

Among the disadvantages are: the possibility of ligating or injuring the ureter; the difficulty sometimes experienced in reaching the uterine arteries; the possibility of securing so effective an arrest of blood-supply that the tumor, incompletely nourished, undergoes caries or necrosis, when the danger is greatly enhanced.

The complete absorption of a mature fibroid, or one which encroaches largely upon the uterine cavity, must be doubtful. The retention of a portion of such a growth must be a menace, should the patient become pregnant, as it may be a source of dystocia and the increased nutrition lead to its development. The influence of the reduced supply of blood to the uterus upon the subsequent possibility of conception and ability of the organ to nourish the product to full term is worthy of consideration.

Enucleation of growths which have been pushed into the uterus, forming sessile tumors, when the uterine canal has been partially or completely dilated, has long been practised. When the tumors were of considerable size it has been supplemented by removal piecemeal or morcellation.

What the author particularly wishes to impress is that by a combination of these methods we may succeed in removing growths, and leave a functionating uterus in cases where it has formerly been deemed necessary to sacrifice the organ.

Sessile, and particularly interstitial, growths situated in the body of the uterus, with a long undilated cervix, have been regarded as either requiring long-continued medical treatment or the sacrifice of the body of the uterus. The former means months or even years of invalidism before the tumor can be so extruded as to render it readily accessible; the latter, the sacrifice of the fondest hopes and the highest aspirations of a woman's life. If such a growth is found in woman near the climacteric, that plan of treatment should be employed which affords relief with the least discomfort and danger; but in a young woman the retention of function justifies greater risk. The procedure the writer suggests is a combination of the various methods already discussed:

First, efficient dilatation of the uterus to at least permit the exploration of its entire cavity with the finger. This dilatation may be accomplished with the repeated use of laminaria tents, or Vulliet's method with gauze packing. With either procedure, the vagina should be rendered as nearly sterile as possible. This is best accomplished by exposing the cervix with retractors, and cleansing the vagina and cervix by repeated swabbing with a formalin solution (1 to 1000); hollow laminaria tents which have been soaked in a saturated solution of iodoform in ether are introduced, or a number of small ones. They are kept in place by a tampon of iodoform gauze. The tents may remain from twelve to twenty-four hours. Unless the cervical canal is very narrow, the dilatation secured by one set of tents will be sufficient for the purpose of the investigation. If it cannot be satisfactorily accomplished, the canal should again be filled with tents, previously taking the precaution to cleanse the vagina and irrigate the uterus with the formalin solution. If the operator is unprepared to proceed to removal of the mass, the dilatation may be retained by packing the uterus firmly with iodoform gauze.

The next procedure will depend upon the size, situation and accessibility of the growth. If well within the cavity, it can be rendered more accessible by splitting the cervix up to or even beyond the internal os. The portion incised will depend upon the situation of the growth. Near the fundus or in a lateral wall

it will probably be more readily exposed by lateral incisions. The anterior and posterior lips are each seized with a double tenaculum and drawn apart while the lateral incisions are made with a bistoury. Care must be exercised not to injure the ureters, which will probably be caused to approach the cervix by the wide eversion of the lips. The incisions do not enter the peritoneal cavity, but permit the uterus to be drawn into the everted broad ligaments as the incision may be carried into the lateral fornices, always keeping in mind the proximity of the ureters. Bleeding from the circular artery or other branches of the uterine artery is temporarily controlled by hemostatic forceps.

In sessile or mural growths of the anterior or posterior wall, not unfrequently the tumor may be more readily exposed through an anterior incision. The dissection of the bladder from the uterus will permit of an extensive exposure. Having made the incision the margins of the wound should be retracted by sutures of heavy silk, as less likely to injure the walls than the double tenacula. Upon exposure the capsule of the tumor should be incised. In mural growths this incision may bifurcate laterally, permitting the overlying uterine tissue to be dissected in two flaps. A firm grasp of the exposed tumor is made, and it is drawn upon while the tissues are pushed off with a blunt dissector, so curved at its end that it will closely hug the surface of the tumor. Such an instrument is preferable to the finger for dissection, as it occupies less space, will do less injury, and is not so likely to carry infection. If the tumor is too large to permit of its complete enucleation, it can be reduced by morcellation. As enucleation progresses it may be facilitated by rotation of the tumor, thus twisting it out of its bed. After the removal of the tumor the parts should be thoroughly irrigated, the torn mucous membrane adjusted, and the cavity packed with a long strip of iodoform gauze, the end of which projects from the cervix. The incised surfaces are accurately brought together with sutures, exercising care that the sutures do not include the protruding gauze. After closure of the incision in front of the uterus, the peritoneal and vaginal surfaces should be sutured to it, placing a gauze drain through the latter.

If the lateral fornices of the vagina have been opened and the cellular tissue much disturbed, a gauze drain should be inserted on each side. The gauze drains should be removed between the third and fifth day, according to the patient's progress. For the ready accomplishment of this operation through the vagina, the uterus must be movable, the tumor not larger than the fist, and the vagina moderately dilated or dilatable.

Where the conditions are unfavorable the growth must be attacked through an abdominal incision. The conservative abdominal procedures are: Ligation of ovarian arteries; myomectomy; enucleation.

The arrest of blood-supply by ligation of the ovarian arteries and anastomosis of ovarian and uterine arteries, as advocated by Robinson, has been demonstrated as capable of reducing the size of fibroid growths, but is open to some of the objections brought against vaginal ligation. A serious operation has been performed which is not certain to produce a favorable result. The tumor remains to undergo degenerative processes or take on new life and development.

Myomectomy has long been recognized as a proper procedure in the treatment of pedunculated extramural growths.

Enucleation of fibroid growths through the peritoneum has been exceptionally practised. Kelly recently read a paper advocating it before the American Medical Association. Chevrier in 1892 reported one hundred and twenty-five cases thus treated with a mortality of sixteen per cent. He cautions against opening the uterine cavity. Is there any reason why the operator should fear to follow it, if necessary, even into the uterine cavity? The wound in the remaining portion of the uterus can be readily sutured, and with just as reasonable hope of success as in the suture of the incision of a Cæsarian section.

In young women, then, we would advocate the enucleation of fibroid growths, even so large as to require the abdomen to be opened, whenever the condition of the ovaries and tubes presents no barrier to the hope for complete restoration of the functions of the pelvic organs. The capsule of the tumor should be incised and the enucleation accomplished with the use of the metal dissector; bleeding vessels should be secured with hemostats, and where the uterus is occupied by a number of growths, the cavity should be temporarily packed with gauze held in place by a suture, otherwise it may become lost in the abdomen and be overlooked. Mural or even intramural tumors should not be considered as contraindicating this method of procedure. In such cases, however, it may

be a question as to the wisdom of drainage by gauze through the vagina. Such practise would necessitate previous sterilization of the vagina. After the enucleation of the growths the cavity should be carefully dried, where the uterine cavity has been entered, the mucous surfaces adjusted and the walls apposed, using for this purpose sterilized catgut.

A NEW INCISION FOR ARTHRECTOMY, RESECTION, AND FOR REDUCTION OF IRREDUCIBLE DISLOCATION OF THE SHOULDER-JOINT.

In the initial number of the *Philadelphia Medical Journal* SENN brings forward the incision for arthrectomy given below. The modern operations for tuberculosis of joints requiring arthrectomy or resection are characterized by thorough removal of the diseased tissue through incisions which afford free access to the joint, and that do not inflict unnecessary damage to important muscles, vessels, and nerves. The ultimate success of such operations depends largely upon the thoroughness with which they are performed, the care exercised in the preservation of healthy tissue, and the prevention of injury to important structures involved at the site of operation. The incisions which are being devised for resection of the different joints have these two objects in view, and the recent improvements in the surgery of joints are largely due to a more perfect technique in performing the operations. The success that has attended the open method in the reduction of irreducible dislocations has added a new impulse to this department of surgery. Attempts to reduce old dislocations of the shoulder-joint have, in the hands of the most careful and competent surgeons, frequently terminated in disaster, so that the surgeon of to-day has learned caution, and is more inclined to remove the obstacles to reduction by a safe and clean dissection than by brute force.

The object of this paper is to describe a new incision for exposing the shoulder-joint for different indications. Senn then gives a retrospective view of the different incisions which have been devised from the time the first excision of the shoulder-joint was made until the present. The incision that he has devised has the great advantage over Bardenheuer's that the scar resulting from the operation is well protected by the prominence formed by the shoulder-joint, and at the same time secures free access to every part of the shoulder-joint and its immediate vicinity. The external incision is made so as to form an oval cutaneous flap, which is turned upward, exposing the upper half of the deltoid muscle. It is commenced over the coracoid process, and is carried downward and outward in a gentle curve as far as the middle of the deltoid muscle, when it is continued in a similar curve upward and backward as far as the posterior border of the axillary space on the same level where it was commenced —that is, a point opposite the coracoid. The semilunar flap is dissected up as far as the base of the acromion process and reflected. The acromion process is detached with a saw and turned downward, with the deltoid muscle attached. The capsule of the joint is now freely exposed.

If the operation is performed for an irreducible dislocation of the shoulder-joint, the head of the humerus can now be located; the cause of resistance to reduction is sought for and removed, or corrected when the reduction can be accomplished by direct means, or by direct measures and manipulation. If the operation has for its object the removal of diseased tissue, the capsule is opened and the interior of the joint subjected to a careful examination, to determine the extent of the operation. If the disease is limited to the soft structures a complete arthrectomy can be performed without sacrificing any portion of the bony constituents of the joint by dislocating the head of the humerus in different directions for the purpose of rendering the entire capsule accessible to the dissecting forceps, knife, and scissors. If the head of the humerus is sufficiently diseased to indicate a typical resection, it should be removed as a preliminary step to the subsequent arthrectomy. The glenoid cavity is readily accessible, and should be dealt with in accordance with the pathologic conditions present. After the removal of all diseased tissue, and proper preparation of the wound, the acromion process is replaced and held in position by two or three strong catgut sutures. Silver wire is seldom required in suturing a temporarily detached bony prominence in operations upon the different joints. The catgut sutures hold the fragment long enough in place for bony union to occur. Senn very rarely drills the bone-ends, as the sutures gain a sufficiently strong hold by including the periosteum and the paraperiosteal structures. In operating upon the shoulder-joint for disease, through-tubular or capillary drainage should be es-

tablished and continued for two or three days. The divided portion of the deltoid muscle is sutured separately with catgut, when the cutaneous flap is brought down in position and sutured in the usual manner.

In operations for irreducible dislocation drainage is not required, and primary healing of the deep and superficial wounds should be aimed at by careful suturing. After applying a copious hygroscopic aseptic dressing, the arm should be immobilized against the side of the chest with a few turns of the plaster-of Paris bandage. The operation as described, undertaken for the reduction of an irreducible dislocation, arthrectomy or re section for disease of the joint, does not involve any of the important tendons, muscles, vessels, or nerves, and for this reason a good functional result may be confidently expected.

A CASE OF STRANGULATION OF THE ILEUM BY PASSAGE THROUGH A CONGENITAL MESENTERIC HOLE; OPERATION; RECOVERY.

J. Stanley Kellett Smith reports a case under this heading in *The Lancet* of October 30, 1897. It is as follows:

A girl, aged fifteen years, was seized, while walking in the street on the afternoon of June 23, 1897, with violent abdominal pains, quickly followed by persistent vomiting. Mr. Bassett Jones, of Aberystwith, who saw the girl the next morning, reported on her condition then as follows: "The patient complained of severe pain referred to the umbilical region; the pain was continuous, but accompanied with paroxysmal exacerbations about every ten minutes, during which the patient suffered great agony. The tongue was furred. The pulse was 90, sharp and small; the respirations were 20; and the temperature was 98.2° F. The abdomen was flaccid and flat, with the walls moving on respiration; there was no local swelling to be seen. It was resonant on percussion, but not tympanitic; there was a small area of dulness in the right iliac fossa, over which there was some tenderness on pressure. Palpation revealed nothing except a sense of resistance over the above mentioned area of dulness. There was no passage of flatus or feces. Vomiting was frequent and of a bilious character; the act was preceded by much nausea, and the stomach emptied itself without much apparent effort. Rectal examination revealed only the presence of small scybala." The lower bowel was emptied by enemata and everything that could be suggested in the way of palliative treatment was tried, but without relief to the symptoms.

The author saw the patient in consultation on June 27, four days after the onset of the illness. Intestinal obstruction had remained complete, and she was then in a state of great exhaustion. The pulse was 140 and of very unpromising character; the respirations were 32. The abdomen was tympanitic, except a small patch of dulness in the right iliac region, and over this patch any pressure upon palpation was strongly resented by the muscles of the abdominal wall. When he saw her vomiting had just taken place, the ejected matter consisting of diluted bile with particles of curd of the milk which had been given in small quantity as food. There was no suspicion of fecal odor.

Operation was advised and immediately carried out. The abdomen was opened from the umbilicus to the pubes. Coils of distended and congested small intestine bulged through the wound, and the escape of these was encouraged until the disposition of the mesentery could be comfortably made out. The gut was then carefully drawn from the abdominal cavity, proceeding always downwards, until the lower part of the ileum was reached, tender manipulation being here necessary owing to the greatly increased congestion of the bowel. The cause of the mischief was found in the shape of a hole in the lower part of the mesentery, pyriform in shape, measuring some two and one-half inches by two inches, with its larger end close to the mesenteric attachment of a small loop of bowel, which, taking its upper and lower limits as fixed points, had swung itself through the hole and thus become strangulated. The parts were judged capable of recovery and so were restored to normal position, recurrence of the accident being guarded against by closure of the aperture. The exposed intestines were then washed with weak perchloride solution and replaced in the abdominal cavity with some difficulty but without the necessity of puncture for gas drainage. The total time of operation occupied thirty-five minutes. Recovery was uninterrupted. Flatus passed on the day following the operation, and the bowels were voluntarily moved on the fourth and subsequent days.

Holes may occur in the mesentery as the result of disease, of injury, or of congenital malformation. The absence of any sign of

previous disease or injury and the negative history thereof, the smooth, thickened margin of the aperture, its size and the regularity of its outline, and especially its situation in the lower part of the mesentery, at the spot where such developmental deficiencies most frequently occur, lead the author to regard this case as a typical example of a congenital mesenteric foramen.

SECRETION NEUROSIS OF THE COLON.

In *Mathews' Quarterly Journal of Rectal and Gastro-Intestinal Diseases* for January, 1898, BYRON ROBINSON discusses this subject and reaches the following results:

1. The above disease of the colon should be termed secretion neurosis and enteritis. The first is of neurotic origin and course.

2. Both secretion neurosis and enteritis may coexist.

3. Secretion neurosis of the colon occurs chiefly in neurotic females (eighty per cent.).

4. It is closely associated with genital disease.

5. It is frequently preceded by constipation (a neurosis of the fecal reservoir or of the inferior mesenteric ganglion).

6. The continuation of the disease is partly due to an irritable, vicious habit of excessive epithelial activity.

7. The disease is characterized by colicky pains, with the evacuation of mucous masses.

8. It is not fatal, variable and erratic in attacks, with impossible prognosis as to time.

9. Microscopically the evacuations appear as membranous, yellowish-white masses of mucus.

10. Microscopically one sees hyaline bodies, cylindrical epithelium, cholesterine crystals, triple phosphates, round cells, various kinds of micro-organisms, and pigment.

11. Chemically the evacuations consist of mucin and albuminous substance.

12. Secretion neurosis of the colon is comparable to the secretion neurosis of the endometrium (membranous dysmenorrhea) or bronchial croup.

13. Secretion neurosis of the colon appears to be limited chiefly to the part of the colon supplied by the inferior mesenteric ganglion —*i.e.*, to the fecal reservoir (the left half of the transverse colon, the descending colon, the sigmoid, and rectum).

14. It is a disease of the sympathetic secretory nerves, and is analogous to the disease of the motor and sensory nerves of the viscera.

15. Its treatment consists in removing the neurosis, which lies in the front ground, and regulating the secretion, which lies in the background.

16. Three views exist as to the above disease, which certainly embrace more than one pathologic process, viz.: (*a*) That the disease is enteritis (catarrh); (*b*) that it is simply excessive secretion of mucus (colica mucosa); (*c*) that it is a secretion neurosis of the colon (nervous).

THE APPLICATION OF HOT WATER IN SURGERY.

BOYCE (*Atlantic Medical Weekly*, Jan. 1, 1898) in an interesting contribution to this subject reminds us that a good deal of ingenuity and research has been expended in devising, for laboratory use, a normal salt solution—that is, an exact chemical solution in which each cell shall have its greatest physiological activity. It is a little surprising that the advanced surgeon, ready enough to avail himself of laboratory work in most other directions, has as yet done nothing in this. Its importance may be in some degree appreciated by those who have followed Schleich's study of the varying effects which follow from slight differences in the saline density of solutions used in inducing anesthesia by the infiltration method. The abdominal surgeons long ago learned that the best method of securing asepsis was not by indiscriminate poisoning, but by securing for the vital elements of the peritoneum the fairest possible field in their contest with bacteria and bacterial products. But when other tissues are concerned we are apt to forget that they are not mere dead surfaces, nor do we always deal with them with a full appreciation of their biological properties.

These considerations are, however, of merely speculative interest until they shall have been thoroughly worked out for us and given a clinical application by men whose perfect command of present methods has given them the right to experiment. For the present those of us who are called on in emergency will content ourselves with approximation to a normal salt solution as is furnished by a six-tenths per cent. solution of sodium chloride. A teaspoonful of ordinary table salt is always within reach; dissolved in a quart of hot water it forms a solution safe even for intravenous injections.

Premising, then, that the water shall be freshly boiled and of such a saline density as

is most acceptable to the tissues, let us inquire what are its physiological effects. One hundred and ten degrees Fahrenheit is about the maximum temperature at which the whole body can be immersed with comfort, but when heat is to be applied to a limited portion of the skin higher temperatures can be borne Thus, while 120° F. would perhaps be the limit for the immersion of the hand or foot, 140° F. is not particularly painful when applied to a limited area. At 150° F. the pain becomes quite severe and the erythema produced is of several minutes' duration. There is, however, no blistering, nor evidence of inflammatory reaction. It is a matter of common observation that the deeper tissues of the wound are less sensitive, and will bear a higher temperature than the skin edges. At 159° F. coagulation of proteids and consequent destruction of vital activity is produced.

The effect of the application of these high temperatures varies greatly according to the length of the exposure. At first the vessels are entirely relaxed; the part is congested, red, swollen, and soggy; its superficial veins are distended and tortuous, its lymph spaces filled with fluid. In a short time, however, this picture is changed. The part becomes pale, dry, and shriveled, drained of fluid, both in blood-vessels and lymph space. This reduction of congestion, seen in pathological conditions as well as normal, is perhaps the most important surgical application of moist heat. The gynecologist makes most extensive use of it with his treatment of turgid pelvic viscera by prolonged hot douching.

Quite lately there has been introduced a treatment for gonorrhea by prolonged irrigation of the urethra with very hot water. The fact that a very small quantity of permanganate of potassium is dissolved in the water probably contributes but little to the success of this method of treatment.

A class of cases in which the value of the hot application has been overlooked is the very common one of joint sprains, particularly those of the ankle. A sprained part immersed in water heated up to the limit of endurance at first throbs and burns most painfully, but soon, in twenty minutes to an hour, its swelling and tenderness lessen, the part becomes more movable, and comfort is restored. The dependent position rendered necessary for immersion is a disadvantage; in the intervals of application the part should be elevated.

This method of treatment of a sprain will probably never attain great popularity, for it cannot afford such instantaneous relief of pain and disability as does the method by strapping. The delight and gratitude of a patient whose sprained ankle has been properly compressed and supported is something not easy for a physician to forego, yet the author believes that the immediate relief is at the expense of the ultimate strength of the part, and that if the profession would adopt a different line of treatment, we would hear less of ankles not to be depended upon for walking on level ground and of shoulder-joints that go out on slightest provocation.

Another use of continued hot applications, in promoting suppurative processes, is now more honored in the breach than in the observance. With the passing away of the "laudable" character of pus, has passed also all our laudation for the poultice. Yet the septic character which was incidental to the old-fashioned poultice should not blind us to the value of its essential elements—heat and moisture. The same effects are today secured by continued immersion in cases where large sloughs are to be separated. This method prevents obvious inconveniences which restrict its application to the more serious cases. A moist dressing, consisting of antiseptic gauze applied dripping out of very hot water, covered with a heavy layer of flannel to retain heat, and this again with oiled muslin or rubber tissue to retain moisture, constitutes a clean poultice of great value in many minor cases. The author refers to such cases as abscess, cellulitis, lacerated wounds, etc., infected when we first see them, where, in spite of free incision, and with no apparent mechanical obstruction, drainage is yet not free when the tissues about the wound are swollen, infiltrated, red, and painful. One application of a dressing such as described above will do more for such a case than days of antiseptic cleansing.

Next we come to the use of hot water as a hemostatic. For this purpose it is applied at a sufficiently high temperature to clot the blood in the vessels back to their trunks, and to cover the wound with a peculiar dry glaze. This effect is extremely useful in drying up the field of operation, allowing us to distinguish one tissue from another where a moment before was one uniform surface, red and oozing.

An extended series of cases where the tip of the finger had been sliced off with a sharp knife, leaving the exquisitely tender pulp exposed in the wound and spouting

blood, enabled the author to demonstrate the superiority of hot water to other agents, such as acetanilid, peroxide of hydrogen, alum, etc., which are said to control capillary hemorrhage without interfering with healing; and the application of heat in this manner seemed to promote in no small degree aseptic healing, which in this case was by scabbing. So manifest was this effect as to suggest the possibility of sterilizing wounds by moist heat.

We know that the ordinary pyogenic bacteria are not extremely tenacious of life, that they are destroyed, when moist, at a temperature not much above 140° F., while the tissues will stand without disintegration a temperature of 150° or more. So it seems probable that by the application of such a degree of heat as is within the limits of safety we may at least exert an inhibiting effect on the activity of the pyogenic organisms sufficient to give the tissues the advantage in that struggle upon which clinical asepsis always depends.

TREATMENT OF COLLES' FRACTURE.

EDWARD A. TRACY (*Journal of the American Medical Association*, Nov. 20, 1897), speaking on the subject of the treatment of Colles' fracture, says that since the recognition by Colles of the real nature of this injury, there had been a marked tendency till within recent years to overtreat it, with more or less baneful results. Sir Astley Cooper advised that four or five weeks be let elapse before passive motion in the aged be attempted. He remarked that recovery is slow, it sometimes being six months before the finger motions were restored. Agnew, Bryant, Moullin, Walshe and McClelland all recognize that the stiffness of the fingers and wrist is due to the fibrinous exudations around the tendon sheaths about the seat of the fracture. Bryant states that passive movements ought to be employed by the surgeon at an earlier period than has been wont; but that time he does not specify.

Moullin advises passive motion of the fingers from the first day, stating that this generally prevents stiffness of them. With the wrist, he states, it is generally more difficult (to prevent stiffness), "but on several occasions the author has begun gentle manipulations on the fourth or fifth day with excellent results." Tracy believes that Moullin's very definite instruction in regard to passive movements of the fingers to be begun at once, and of the wrist-joint on the fourth or fifth day, is good practise, and that it ought to become general. All surgeons probably will agree with Roberts ("Fracture of the Radius," Philadelphia, 1897) that "the displacement (in Colles' fracture) is the result, not of muscular action but of the vulnerating force," and further, that "the muscular surroundings have little to do with the causation or continuance of the distortion." For this reason the fracture, if reduced, has no tendency to again separate. It would seem, therefore, that all that is needful after reduction of the fracture is some simple appliance that will protect the parts from accident while reuniting, and that will not interfere with passive motion of the fingers from the first day. Swinburne's practise of many years ago, referred to above, was good, though his explanation of it, by the principle of extension applied to the parts, was faulty. The author in several cases, after reduction, has molded a piece of wood-fiber splint material over the dorsum of the forearm and hand in a semiprone position, the hand in line with the forearm. This, bandaged over the parts, he finds sufficient protection for them. It does not interfere with passive motion of the fingers, and is readily removed and reapplied to permit of passive motion of the wrist-joint. It is molded directly over the skin, and requires no padding or compress. In these cases he has carefully caused passive motion of the wrist-joint from the fifth day, and discarded the splint on an average of about twenty-one days.

The author believes that the treatment of Colles' fracture could thus be formulated: (1) Reduction, not always easy; (2) protection by a simple retentive appliance while correct reunion of the bone takes place; (3) passive motion of the fingers from the first day; of the wrist, carefully, from the fifth day.

THE TREATMENT OF COXALGIA.

JALAQUIER (*La Presse Médicale*, June 26, 1897) is opposed to resection, and thinks this operation should be reserved for coxalgias complicated with constantly discharging fistulas or abscesses that have resisted punctures followed with injections of camphorated naphthol or of iodoform ether. The operations of the author have been atypical, and he never has felt sure that he has arrived at an entire curettage of the articulation. He agrees with Menard that preliminary injections create a condition favorable to the suc-

cess of the operation. In the treatment of non-suppurative coxalgias he is not exclusive. In the hospital and where the patient can be closely watched he employs continued extension. When the case cannot be attentively watched, Dr. Jalaquier applies the plaster at first after resection under chloroform, if the position is defective. He agrees with Brun in saying that abscesses do not follow more frequently in children treated by this method than in those treated by continued extension.

The author does not share the fears expressed by Kirmisson relative to resecting under chloroform a coxalgia in defective position with or without dislocation, but he emphasizes the statement that he does not employ this method in coxalgias complicated with abscess. When coxalgias are cured or almost cured in a defective position, subtrochanteric osteotomy gives good results. Of one hundred and twenty-two cases treated at the Trosseau Hospital, sixty-seven have presented abscesses. Of the one hundred and twenty-two cases eleven died—seven of meningitis, four of pulmonary complications. This mortality rate is not accurate, as many of the children were not watched to the end. Of the one hundred and twenty-two cases forty-six were treated by simple continued extension, and it is curious that in this series we find five deaths from meningitis and four from pulmonary complications. Eighteen were treated by simple immobilization without resetting; they furnished two deaths from meningitis. Forty-one patients submitted to resecting under chloroform. In this series he found no deaths from meningitis or pulmonary complications. This may be due to good fortune, but the author thinks it is because he has never applied forced resection in children having abscesses or when the general condition was bad.

As to the comparative value of camphorated napthol and iodoform ether in the treatment of abscess, the author states that sixteen abscesses were cured after sixty-eight injections of camphorated naphthol, or an average of three or four punctures for each patient. Twenty-three abscesses were cured after fifty-two injections of iodoform ether, or about two punctures for each patient. Twenty-two abscesses were cured by the combination of the two agents. Abscesses that proved refractory under camphorated naphthol were cured after several injections of iodoform ether. Some abscesses thus treated became fistulous, but the proportion cannot be exactly given; this occurred only when the skin was ready to break spontaneously. The cure of these fistulas can be obtained if care is taken to avoid secondary infection and resort is had to frequent touchings with a solution of lactic acid, one in three.—*Medical Record*, Oct. 30, 1897.

THE TREATMENT OF THE PAINS OF ATAXIA BY METHYLENE BLUE.

It is stated in the *Journal des Praticiens* that LEMOINE has found this substance of value for the relief of ataxic pains. In two cases he failed to obtain good results from its use, but in five out of seven others there was a great diminution in the intensity and frequency of the pains, the relief being complete and prolonged. The pains which seem to be best relieved by methylene blue are the darting pains in the limbs and the sensation as if a tight band were being drawn about the patient. He asserts that the effect of the methylene blue is very rapid and that the pain speedily disappears. In two or three hours the urine is colored blue. In this difficult class of cases Lemoine is of the opinion that methylene blue is one of our best remedies.

CHRONIC PROCTITIS.

In *Mathews' Quarterly Journal of Rectal and Gastro-Intestinal Diseases* for January, 1898, the subject of chronic proctitis is considered by TALLEY. He calls attention to the fact that we have two varieties of non-specific chronic proctitis: (1) Those cases in which a diffuse, persistent inflammation, superficial ulceration and papillomatous vegetations are the prominent features; (2) those in which the submucous tissues are principally involved in a hypertrophic process causing the proliferative stenosing proctitis. This latter condition is often engrafted on the first, and both conditions may coexist in any case.

In the first class of cases ulcerations are rather common, and these ulcers are usually in the lower rectum. This condition follows very readily the acute inflammation from any cause in a chronically congested rectum in patients whose power of resistance has been weakened by any cachexia.

The main symptom of this form of proctitis is slight tenesmus with frequent mucopurulent stools, these being at times streaked with blood; indeed, in some cases a large

quantity of blood is constant in the discharges and forms the most prominent feature of the case. The sphincter muscles become so relaxed in some cases as to cause fecal incontinence. The patient becomes weak and very much emaciated. Unless the inflammation involves the mucous membrane encircled by the sphincter, the patient will experience very little acute pain; however, there is usually a feeling of extreme discomfort in the rectum. When these symptoms have existed for a number of weeks or months it is sure that the patient is suffering from some form of chronic proctitis, and a thorough examination should be made at once. A digital examination may reveal the presence of ulcers when situated low in the rectum; however, this should not satisfy the physician, even if it be a fact that a majority of the ulcers are within reach of the finger. The entire rectum should be thoroughly inspected in every case, and to do this it is necessary to use the proctoscope. It should be remembered that the mucous membrane has, normally, rather a congested appearance, and when healthy may be mistaken for disease if compared with mucous membrane of other parts of the body.

Rest in the recumbent position is of paramount importance in the treatment of this form of proctitis The diet should be of a liquid character, bland and nutritious. It is usually a difficult matter to properly diet a patient unless he is placed in an infirmary and carefully watched, for if treated at home, when he begins to improve and becomes very hungry some improper food will be given in spite of directions.

It is best in most cases to dilate the sphincter muscle, especially when the trouble is low in the rectum. When this is done the patient's bowels should first be thoroughly emptied with an aperient and the rectum washed out with a solution of boric acid; then the patient is anesthetized and the muscle paralyzed. After this the rectum is thoroughly inspected, and any ulcers discovered touched with a solution of nitrate of silver, forty to sixty grains to the ounce. Where there is no ulceration, but a diffuse chronic inflammation, the mucous membrane should be mopped with silver or copper of the strength of thirty grains to the ounce. The after-treatment consists in putting the patient to bed, washing rectum daily with warm boric acid solution, and the use of suppositories of iodoform and boric acid. A very useful injection in this condition is sweet oil and iodoform, seven grains to the ounce, a tablespoonful to be injected at bedtime. These injections should be given with the hips elevated to prevent the oil from passing out.

In very chronic cases where the ulcers are extremely indolent, the solid stick of silver or crystal of copper may be used. In these cases it is necessary to make repeated applications before the ulcers become healthy and begin to heal.

It is stated by some authorities that we never find chronic proctitis in children. The author cannot agree with this statement, as a case came under his care a few years since in a boy four years of age. He had been passing considerable blood every time he went to stool for twelve months, averaging four or five stools daily. He had him anesthetized, dilated the sphincter, and examined the rectum as thoroughly as he could with a speculum. The mucous membrane was intensely red and granular. He applied freely a solution of silver, thirty grains to the ounce, over a surface somewhat larger than a silver dollar. The after-treatment consisted of washing the rectum with a warm boric acid solution and the injecting of a tablespoonful of sweet oil with three grains of iodoform at bedtime. This little patient was much better the day after the operation, when he passed very little blood. From that time on he steadily improved, and in six weeks was perfectly well. This was over two years ago, and he has had no recurrence of the trouble. During the twelve months he suffered he was continually taking medicine with no relief.

In very sluggish ulcers it is well to scarify or curette them before any application is made. Some works recommend enemata of starch-water and laudanum to relieve pain, but in the author's experience, where much pain exists it is due to some trouble in the sphincter area and is promptly and permanently relieved by divulsion of the sphincter muscle. He does not favor any medication of the rectum except that which is stimulating, antiseptic, or cleansing. In extreme cases, where the above treatment fails to cure and the disease is situated just above the sphincter, involving only a small area, it may be excised and the healthy membrane brought down and stitched to the skin at the anal margin, just as it is in Whitehead's operation for hemorrhoids. Papillomatous vegetations should be destroyed by chromic acid or the thermo-cautery. When they are high in the rectum and cannot be reached with a specu-

lum, the authorities advise splitting the rectum and anus back through the median line to the coccyx, to gain access to the trouble; but the author believes we will probably never have a case that cannot be effectually treated through the proctoscope. Very rarely a case may present with a tumor too large to be treated in this way.

The main feature of the proliferative stenosing proctitis is the involvement of the submucous connective tissues in a fibrous hyperplastic process which causes a thickening of the rectal walls and subsequent contraction and stenosis of the rectum. In this variety all the normal structures of the rectum are matted and fused together, the normal endothelium is changed, and the glands become atrophied. In some cases the inflammatory process extends into the perirectal tissues.

The lower half of the rectum is usually the seat of trouble, and in most cases it does not extend more than two or three inches above the sphincter muscle. There is rarely more than one point of extreme contraction, and there may be a chronic superficial ulcerative proctitis both above and below the constriction. The lumen of this stricture may become very small, but rarely closes entirely, as the passing of feces keeps up a certain amount of dilatation. This form of proctitis usually follows and is a late stage of the chronic ulcerative variety.

For the deep tissues to become affected it is not necessary for these ulcerations to be extensive, but just sufficiently large to admit the infection. In some of these cases we get a history of syphilis, but in none of them has the author been able to cause any absorption or disappearance of the inflammatory products by administering antisyphilitic treatment. So it appears that if the primary lesion was of a syphilitic nature, it only acted as a simple ulcer in opening up the structures of the bowel to deep infection. An inflammatory thickening of the rectal walls due to tubercular infection is usually accompanied by extensive tubercular ulcerations and evidences in other parts of the body of tuberculosis.

A patient suffering with stenosing proctitis will notice an increasing difficulty in defecation. In the morning there is often a feeling of urgent necessity to evacuate the bowels, but when he goes to stool he strains long and accomplishes little, and does not experience that relief which follows a thorough evacuation. He frequently passes little hard balls of fecal matter, and when the constriction is low the mold of the fecal mass will somewhat resemble a lead-pencil or a small tape. In this condition it is very easy for obstruction to occur from a blocking of the small passage with hardened feces. More can be learned of this condition by digital examination than in any other way. Instruments cannot be used on account of the constriction. By the finger you can distinguish a diffuse thickening of the rectal walls with a constriction in many cases, which will not allow it to pass. Strictures due to the healing of ulcers have a different feeling; they are irregular, and sharp bands project into the bowel. Carcinoma of the rectum may be eliminated by the history of the case.

This stenosed condition of the rectum never recedes spontaneously, nor is it benefited by any internal medication. It may be treated by palliative means or dealt with in a radical way. The best palliative method is to dilate as much as possible with elastic bougies and continue to pass them, at intervals, indefinitely. The Wales bougie is to be preferred, as it is hollow, and water may be passed through it while it is being introduced, to press the mucous folds out of the way and keep the instrument from catching in them. These bougies should not be passed oftener than every five days.

When the stricture is very resistant, an internal proctotomy should be performed to facilitate dilatation. There is little danger in this operation when the stricture is not more than two inches above the sphincter muscle. After internal proctotomy it is generally advisable to forcibly dilate the stricture with an instrument made especially for the purpose. Even after the latter procedure it is a good plan to pass soft-rubber bougies occasionally to avoid a recurrence of the stenosis.

CONTUSIONS OF THE ABDOMEN.

DEMONS (*Revue de Chirurgie*, No. 11, 1897) read a paper before the French Surgical Society upon this topic. He pointed out that as a result of traumatism applied to the abdomen the parietes could be injured, or the parietes together with internal organs, or the internal organs alone without demonstrable lesion of the parietes. The first question to determine is whether there is any visceral lesion. The muscular resistance offered by the abdominal walls varies in different individuals, also in the same individual according to the point at which force is applied and the condition of contraction or relaxation under

which the muscles are found at the moment of injury. Post-mortem experiments have shown that an astonishing degree of force is necessary to rupture viscera because of the resistance offered by the rigid muscles. This resistance, of course, is done away with when an injury is inflicted during sleep or when the patient is profoundly drunk. It is very great when the blow has been inflicted at the moment of violent muscular effort. The direction of traumatism is most important. If it is perpendicular to the walls its effects are more dangerous; if glancing, it is not so likely to injure the internal organs. Moreover, viscera are more vulnerable at certain times; thus, a distended stomach is much more readily ruptured than one which is empty, and pathological alterations in the walls of the intestinal canal render it more easily ruptured. Wandering viscera are more readily injured than those normally placed, and adhesions fixing organs prevent them from flying away from force. The symptoms vary greatly; sometimes these are very slight; sometimes they are extremely well marked. Between these two extremes there is every grade of severity. Pain is nearly always present. It may be limited, diffuse, or even radiating to other regions. It may be spontaneous or provoked. Clinical experience has shown that it is often more intense in contusions of the parietes, that it may be insignificant and transitory in visceral ruptures. Ecchymoses and tumefactions have no symptomatic value; this, also, may be said of one or two vomitings of the contents of the stomach and of slight tympany. Rigidity of the belly is, however, highly characteristic and sometimes accompanied by moderate tympany; it sometimes develops with a perfectly flat belly. It commonly accompanies rupture of hollow organs. The important general symptoms may be entirely absent or extremely well marked. Usually they are expressed in the form of shock. This when present is significant, but when absent by no means excludes the presence of most serious internal lesions.

The determination of the particular viscus wounded, the nature of the force and its point of application and the seat and nature of the pain are extremely important. Later local and general symptoms of internal hemorrhage are extremely characteristic, and finally the appearance of certain symptoms which we know are associated with lesions of certain viscera may complete a satisfactory symptomatology, so that diagnosis in a considerable number of cases is not only possible, but even readily made shortly after an accident; thus extensive ruptures of the liver, kidney, or even the spleen, can be recognized without much difficulty, but it must be remembered that in a considerable number of cases the nature of the injury will remain obscure.

As to the exact portion of the organ injured and the presence of single or multiple lesions, this must necessarily be a matter of conjecture. As to the evolution of these cases, there are cases of apparently slight severity which promptly and permanently recover; others of these apparently favorable cases become worse for a time and then recover; others suddenly become extremely grave; others recover for a time and then later become extremely severe. Others, severe from the first, recover after a time and then become extremely grave; in others the outlook remains grave from the very first.

In forming the diagnosis insufflation of hydrogen has not proven successful and is attended with dangers. Exploratory puncture is likewise to be condemned. Exploratory laparotomy is the method of choice and would be universally adopted if it were absolutely inoffensive; however, it requires the administration of an anesthetic and should only be adopted when the possible advantages arising from it more than counterbalance its inconveniences. It should be practised immediately when the *ensemble* of symptoms suggest from the first rupture. It should be delayed in cases which are at first apparently trifling, but later become serious, or when it is necessary to allow the patient to recover sufficiently from shock to justify intervention. Late intervention is indicated when cases which are apparently trifling assume a serious aspect. Medical treatment is practically that applicable to shock.

THE TREATMENT OF TETANUS BY ANTITETANIC SERUM.

BORNET (*Gazette des Hôpitaux*, 1897) reports a case of tetanus recovering after ten injections of antitetanic serum. The disease developed after the patient worked eight days in the hold of a vessel, unloading sugar sacks. There was no distinct wound, and the author concludes that the infection took place through abrasions of the hands and possibly through the lungs. The disease began with trismus; the next day it was followed by violent general contraction be-

ginning with the cervical muscles and involving the back. Five days later the muscles of the legs were attacked, whilst the arms were not involved at all. The patient came to the hospital eight days from the beginning of his disease and the next eleven days received ten injections, each of ten cubic centimeters of antitetanic serum. He recovered completely.

[It is evident that this patient was attacked with a light form of tetanus and one from which patients not uncommonly recover spontaneously. From the meager report of the case it is difficult to determine whether or not the treatment was especially efficacious.]

Reviews.

PATHOLOGICAL TECHNIQUE: A Practical Guide for the Pathological Laboratory. By Frank Burr Mallory, M.D., and James Homer Wright, M.D.
Philadelphia: W. B. Saunders, 1897.

The work under review, as the title indicates, is a guide for the pathological laboratory, giving the methods for preparing and studying morbid tissues of all kinds. In addition it furnishes directions for conducting post-mortem examinations and bacteriological investigations, both clinical and experimental. The descriptions are clear and most accurate. Everywhere there is the evidence of abundant personal experience on the part of the authors, and the various methods recommended are described in such manner that the student will appreciate at once that the authors have found the methods useful when carried out as they describe them. An important advantage of the book is the heavy-faced type used for headings and titles of methods. This is of very great importance in all works intended for laboratory reference.

We need not enter into a review of the separate chapters. They are uniformly good. It may be well, however, to call attention to a few deficiencies. We should have been pleased to see the writers incorporate a short chapter on the aniline dyes, to give the student a general idea of their relative and general properties. The multiplicity of stains, many of them nearly alike in character and action, and many others quite dissimilar though nearly alike in name, proves confusing to students, and would warrant the introduction of a section such as we suggest. Perhaps the authors take a different view, and of course such a chapter is not strictly a requisite. The sections on examination of the stomach contents, the blood, sputa, urine and feces deal with matters really more closely connected with clinical medicine than pathology. They are very short and in comparison with the rest of the book imperfect and unsatisfactory. It would have been better in our estimation to have omitted them entirely rather than to introduce them in their present form, in which, as the authors state, they pretend only to present what is of interest to the student in pathology. These remarks apply especially to the parts on urine, feces, and gastric contents.

Notwithstanding these slight blemishes the work is the most satisfactory guide of its kind in our language. A. S.

A SYSTEM OF MEDICINE BY MANY WRITERS. Edited by Thomas Clifford Allbutt, M.A., M.D., F.R.C.P. Volumes I, III, and IV.
New York: Macmillan & Company, 1896 and 1897.

While a number of excellent works, of an encyclopedic character, dealing with the practise of medicine have appeared in American medical literature within the last ten or fifteen years, no such work of English authorship of equal importance has been compiled. In the GAZETTE for June, 1897, we reviewed the second volume of this series, because that was the first one sent us, and pointed out at that time that the publishers had been fortunate in obtaining an editor so well qualified to carry out a rather difficult task. From a reading of that review it must have been evident to all that the plan of the series was admirable, and those who are fortunate to have had the opportunity of reading the other volumes so far published must be favorably impressed with the practical utility of all the text.

The opening of the first volume on the Prolegomena, with articles on topics introductory and fundamental, is written by such well known men as, among others, Billings, Hutchinson, Burdon-Sanderson, Leech, Eustace Smith, and Dyce Duckworth. The articles upon the Fevers, which follow in the next part, are models of condensed information, so stated as to be useful to the practitioner, but they are not as a rule so exhaustive as in some of the American works on Practise. Perhaps the most noteworthy are those chapters on Diphtheria, by Gee, Thorne Thorne, Kanthack, and Herringham; on Enteric Fever, by Dreschfeld; and on Puerperal Septic Disease, by Playfair.

In the third volume we find the Diseases

of Obscure Causation, such as Rheumatism, Gout, Diabetes, Rickets, Acromegaly, etc. Of the authors of these articles the best known to our readers are Garrod, Cheadle, and Saundby. Following the articles on these subjects we come to the next section, on Diseases of the Alimentary Canal. The opening chapters in this section are on the Pathology of Digestion, by Ralfe and Fenwick; on the Pathology of Secretion, by Rose Bradford; and on Shock and Collapse, by Cobbett. Why these last named conditions should be considered in this place is not clear. The article on Dilatation of the Stomach is naturally written by the Editor, who was one of the first to study this important condition. By a curious division of labor Treves writes on Acute Peritonitis, while Acute Peritonitis of Undetermined Nature is written upon by Allchin. In the part on Disorders of the Bowels we find interesting articles by such men as Brunton, Rolleston, Hale White, and Treves.

The fourth volume, on Diseases of the Liver, of the Kidneys, of the Lymphatic and Ductless Glands, Diseases of the Respiratory System, and of the Nose, Pharynx and Larynx, is slightly smaller than its predecessors. The articles in it are quite up to the high standard set for it by the preceding issues, and the names of the authors are equally well known to the profession in this country and in England. What could be more appropriate than that Lafleur should write on Amœbic Dysentery, Hunter on Diseases of the Liver, and Henry Morris on the Surgical Affections of the Kidneys; or finally, that Ord should write on Myxœdema or Felix Semon on Diseases of the Larynx or Pharynx. The character of the authors is a guarantee of the value of their contributions to this very notable work, which will possess the advantage to American readers of presenting the subjects in a somewhat different manner from that to which they are accustomed.

DISEASES OF THE EYE. By Edward Nettleship, F.R.C.S. Revised and edited by W. T. Holmes Spicer, M.A., M.B., F.R.C.S. Fifth American from the sixth English edition. With a supplement on color blindness by William Thomson, M.D. Cloth, $2.25.

Philadelphia and New York: Lea Brothers & Company, 1897.

Nettleship on the Eye has become a classic in the literature of medicine. This is due to the fact that it presents the reader with the very important facts in ophthalmology and leaves the discussion of the more abstruse facts to the larger and more exhaustive works on this topic. In other words it is emphatically the book on the eye for the beginner in ophthalmology and for the general practitioner of medicine. Even the trained ophthalmologist finds it valuable, and often turns to its pages. Whenever the views of our English cousins clash with those commonly held in America the American editor points out the variation and makes the text conform to American views. The chapter on color blindness is of course particularly authoritative. Originally good, the book has been improved with each edition and now represents the advanced ophthalmology of the day.

A CLINICAL TEXT-BOOK OF SURGICAL DIAGNOSIS AND TREATMENT. For Practitioners and Students of Surgery and Medicine. By J. W. MacDonald, M.D. Illustrated.

Philadelphia: W. B. Saunders, 1898.

The attractive title of this book suggests the aim the author had in view and which he clearly expresses, to the effect that the rapid advance in the art of surgery makes it necessary to issue systems of surgery in many volumes, and text-books of large dimensions are now deemed necessary to cover the field. As a matter of fact the physician wishes to know first what is the disease or injury and next what is its proper treatment. Considerations having to do with pathology and bacteriology are omitted. The author states that he has taken great care to make the examination of each disease or injury systematic and comprehensive, and, when possible, directions are laid down as to the methods of examination.

The scheme is an extremely attractive and practical one, and provided it is carried out in a scholarly and systematic manner the book is likely to be of much greater service to the general practitioner than are the large systems that have recently been put upon the market. A review of the book is at once convincing as to the conscientiousness with which MacDonald has performed his work. Practically all the modern and approved operations are described with gratifying thoroughness and clearness. The illustrations are copious, excellent, and apt. There is a noteworthy absence of digression from the main points at issue and of that confusing minutiæ of detail in describing comparatively unimportant symptoms or operations in which the author may happen to be personally interested. The book can be heartily recommended, and there can be little doubt as to the favor with which it is likely to be received by the profession.

Correspondence.

LONDON LETTER.

By Raymond Crawfurd, M.A. Oxon., M.D., M.R.C.P. Lond.

In our last letter we referred to the discussion at the Royal Medical and Chirurgical Society on the prevention of enteric fever, which has now been brought to a close at a second meeting. At the opening debate the matter was mainly discussed from the point of view of the public health officer, but Dr. Payne discreetly pointed out the unreasonableness of such an attitude. If we assume that enteric fever is in the strict sense a specific disease, and that each fresh case can and does only arise from a preexisting case, obviously the medical man at the bedside should be the first line of defense. If by close antiseptic precautions the disease can be hemmed in at the bedside, there will be no need for the enormous labor of examining water-courses and water-supplies. We are too apt to look upon feces as the sole vehicle of the specific infection, but only recently two cases have come under our observation where the disease was almost certainly carried in the saliva from one patient to another, by drinking out of the same cup. Feces are very readily dealt with because, although in most houses the ideal method of burning them is impracticable, they may be rendered quite harmless with corrosive sublimate solutions. On the other hand the disinfection of bedclothing is very insufficient. Linen and cotton fabrics can be dipped in carbolic solutions and then boiled, but the same treatment cannot be meted out to woolen and flannel garments and blankets without damage to them; and for these articles there is the same objection to the use of corrosive sublimate solutions. Where disinfecting ovens are handy, these of course supply an obvious means of disinfection, but we still require some convenient method of dealing with these articles in private houses. Incidentally Dr. Payne expressed a belief that the theory of infection by inhalation of the typhoid micro-organism was something more substantial than a popular phantom. Indeed, Dr. Tivy sought to substantiate this view in the case of the Clifton epidemic, which Dr. Davies, the medical officer of health in Bristol, had conclusively traced to a polluted milk supply, as we mentioned in our last letter. Dr. Tivy maintained that this epidemic of enteric fever was due to sewer-gas poisoning from want of ventilation of the main drains, a condition that was intensified by the drought prevalent in August, September, and October. Sewer-gas seemingly found its way back into the houses, and especially into those situated in the higher parts of the town. Inasmuch, however, as Dr. Tivy did not marshal even the ghost of an argument in support of his views, it would be absurd to maintain his assumption against the detailed and elaborate conclusions of Dr. Davies' report. This appears, too, to be the view of the medical practitioners of Clifton, who have risen unanimously in support of their medical officer of health.

On Friday, November 26, the Clinical Society resumed their discussion on the treatment of angular deformity of the spine by immediate reduction. Mr. Watson Cheyne expressed himself as skeptical of the value of this method of treatment. He was surprised that the ill effects recorded were so few. General tuberculosis so often followed upon the forcible straightening of a tuberculous joint that one would have expected the same accident in dealing similarly with the spine. Then, again, it is impossible to conceive that the large gaps in the bodies of the vertebræ can be filled in by newly formed healthy bone, and there is but little justification for attempting Cabot's plan of securing posterior ankylosis by laminectomy. It is extremely doubtful whether better results are obtained by this method than by the double extension method as commonly practised in this country. Mr. Noble Smith agreed with Mr. Cheyne that time alone could pronounce a verdict on the procedure. For the present it seemed desirable to rest contented with the operations that had been performed, and to see what would be their outcome after two years had elapsed. He cited cases to show that much greater danger of general dissemination of the tuberculosis existed than the recorded cases would suggest; and in one case the new bone that had been formed in the gap of the vertebral bodies in the course of two and a half years was so soft and friable that it could not be said that any useful repair had taken place at all. For those interested in the details of the procedure we would call attention to an attractive article by Mr. Tubley in the January number of the *Practitioner*. This journal is now entering on the fourth year of its transformed existence, and holds an undisputed supremacy over all rival publications

in this country. To this end nothing has conduced so greatly as the indefatigable energy and judicious piloting of the editor, Mr. Malcolm Morris. We are looking forward to seeing its pages adorned by articles from the pens of our American brethren. Several other modifications have been introduced into the new series with a view to making the journal more definitely practical and clinical than heretofore.

The General Medical Council has succeeded in exciting general disapprobation by at last doing something. Their resentment has fallen on the head of the already much-to-be-pitied unqualified assistant. He is to cease to exist, and that forthwith. We have no wish to defend the existence of the unqualified practitioner, but seeing that he has been tolerated for years, and that in many instances this very tolerance has led to his existence, we would have given him a longer rope with which to hang himself. As it is, he is doomed to disappear, and we shudder to think of the prospect provided for the families with which in many instances they are cursed. We cannot but think that the Council might have found some more desirable object on which to exercise its punitive zeal.

At the Pathological Society of Manchester Dr. Raw showed a case of acute tuberculosis of the pleura, and made some remarks on the treatment of this condition. In his case, as so often happens, the pleura was affected without any invasion of the lung tissue. Few will be found to quarrel with his dictum that probably all cases of pleurisy are of microbial origin, and that cold is at most a predisposing agency, lowering the power of the lung to resist the activity of micro-organisms. It will also be pretty generally conceded that the large proportion of pleurisies, especially of insidious origin, and not occurring in the course of any specific or septic disease, are tubercular in origin. In this connection Dr. Raw recommends that as much of the infected pleura as possible should be removed and scraped away in operations for empyema due to recognized tuberculosis of the pleura. But therein lies the difficulty that the tubercular nature of the process is seldom demonstrable because of the extreme rarity with which tubercle bacilli are found in empyemata of almost certainly tuberculous origin.

In the *British Medical Journal* of December 4, 1897, Dr. Thin calls attention to the curative effects of milk diet in cases of intestinal derangement. Every physician is aware of the readiness with which many cases of obstinate diarrhea, even of a dysenteric type, yield to rest in bed and an exclusively milk diet. Dr. Thin's observations refer especially to cases of psilosis, in which unmistakable signs of systemic poisoning were present in the patients until milk was substituted for other nutritious articles of diet. Even so, we have to decide whether the removal of other food substances or the adoption of the milk diet was the cause of the improvement. Dr. Thin inclines to the former alternative and suggests that some ferment can develop in such foodstuffs which cannot grow in milk or its products during digestion. Certainly in psilosis one of the most marked features of the intestinal flux is the abnormal degree of fermentation manifested in the evacuations. If a lightly boiled egg or a cupful of arrowroot is capable of producing a severe relapse, we may pretty safely assume that it is the presence of food materials other than milk in the intestine that encourages this abnormal fermentation. In other words, the virtues of a milk diet are rather passive than active. Incidentally Dr. Thin mentioned a case of lupus erythematosus that had completely healed under an exclusively milk diet, but subsequent experience of the same treatment had confirmed the *post hoc* but not the *propter hoc* of the cure.

At the meeting of the British Balneological Society Dr. Snow drew attention to the increase of intemperance from the administration of coca wine to invalids. This is in nearly every instance a strong alcoholic beverage containing more or less of one of the preparations of the *Erythroxylon Coca*. Thus the patient is exposed to the danger of contracting not only the alcohol habit, but the coca habit as well. Women who have not the hardihood to openly procure alcohol over the counter, will demand it without a blush under the innocent name coca wine, or a still more enticing French title. Many mothers, too, who would hold up their hands in holy horror at allowing their children to taste wine, allow them to resort freely to the bottle of coca wine, believing it to be as innocuous as it is palatable. We fear the practise would come into even more general use if the attractions depicted in a recent work on pharmacy were more widely known: "The subject experiences an exaggerated sense of *bien être*, a feeling of veritable beatitude, both mental and physical, expressing itself in incoherent

flights of the imagination and an abnormally acute consciousness of muscular vigor." The charms of opium and alcohol pale before this beatific vision.

We regret to say that the Council of the British Medical Association, acting upon the resolution passed at the general meeting in August, has sent reply-paid postcards to all the members of the Association, inviting an answer to two questions: (1) Are you in favor of the Association undertaking the duties of medical defense? (2) Are you willing to pay a special subscription of not less than five shillings, or more than ten shillings, for this purpose? As yet we have no information as to the result of this plebiscite, but we cannot conceive the likelihood of a majority of the members favoring such a proposition. The large majority of members joined the Association for the purpose of keeping themselves abreast of advancés in modern medicine and surgery, and not to subsidize their medical brethren in fighting out their professional squabbles. It is impossible to see what even visionary advantage can accrue to the Association from taking on its shoulders a burden which has hitherto been satisfactorily borne by an absolutely independent Medical Defense Union.

Mr. Symons Eccles read a paper before the Medical Society of London on the Mechano-Therapy of Movable Kidney. Sixteen cases had been treated by him by the "rest cure," with special attention to abdominal massage and exercises for periods varying from fourteen days up to eight weeks. Out of eight patients who submitted themselves to a prolonged course of treatment, five were very greatly improved by abdominal massage, exercises, and the application of the pad and belt; one of these had been free from all discomfort for five years, and another for two years after suffering a prolonged period of discomfort prior to the treatment. No one will quarrel with Mr. Eccles over the benefits obtained by rest and recumbency in cases of movable kidney, but it is difficult to see on what possible theory massage can check the mobility of a dislocated kidney. For our own part we have long since discarded any belief in the efficacy of the pad and bandage, although in some cases its presence seems to charm away some of the subjective disturbances so commonly associated with the condition. If any interference can be considered justifiable, nephrorrhaphy at any rate has the merit of being a rational line of treatment.

BERLIN LETTER.

By James J. Walsh, Ph.D., M.D.

Two things are prominent in therapeutics in Berlin as we begin the year. One is Dr. Frenkel's (of Heiden, Switzerland) treatment for locomotor ataxia by means of exercises calculated to teach coordination once more; the other is the therapeutic effect of diet in health and disease. The former has been the subject of special demonstrations in at least two of the medical societies recently, and is constantly referred to by the clinicians. When there is a consensus of opinion among men who differ so widely on certain points in nervous diseases, especially in reference to tabes, as Leyden, Jolly, Mendel, Gerhardt, Oppenheim, and Remak, one can be sure that there must be some very convincing reasons for their agreement.

The idea of the movement treatment is to teach the patient again the coordination of muscles and the muscular sense that he has lost by the gradual involvement of the fibers of his posterior columns in tabes and related nerve affections. It would seem utterly visionary at first thought to hope for improvement in incoordination due to the fact that the sensory paths no longer convey to the consciousness the relative positions of parts and the state of contraction of muscles. That walking could for instance be taught again after it had been lost through an organic lesion involving that complex of sensations which goes to make up the equilibrium sense would seem incredible, but that is not only what is claimed for the Frenkel treatment, but is actually being accomplished by it in every prominent nervous clinic in Europe.

Patients who have been bedridden for years because of absolute inability to regulate their muscles for walking, get out of bed and learn even to go up and down stairs. A case at the Salpêtrière in Paris, which had not been out of bed for six years, now walks the streets without a companion. To one who knows how ataxics lack the confidence to go alone in busy streets, this means a great deal. Corresponding cases that have been bed-fast for three, four and six years, and even longer, have been reported here.

So much it seems necessary to say as a preliminary about the results because the treatment is so simple. It consists in putting the patient through the simplest exercises with the parts that are especially ataxic, but

requiring him to do them with the greatest exactness possible. If for instance he is confined to his bed, he is asked to put the heel of one foot on the kneecap of the other leg. First this is done with the aid of his eyes, then with the eyes closed. In a surprisingly short time this movement, which is so often used to show the presence of ataxia, can be performed very exactly and promptly. It was from experience with something like this that the treatment originated. A distinguished neurologist, about to give a clinical lecture on tabes, had a rehearsal of his patients beforehand in order to see what sets of movements particularly demonstrated the ataxia of each case. The patients were told they would be put through these before the class. Becoming a little anxious about doing them well, many of the patients repeated the movements a number of times beforehand, with the result that they utterly spoiled the demonstration.

After the exercises in bed the patient is put on his feet, and with proper support put through the motions of walking. He is asked to put one foot forward a little distance, then a greater distance, then toward the side, then backward. Each time it is pointed out just where he should put it, so as to teach exactness and reestablish the muscular sense and the sensations of coordination. After a while he is able to dispense with supports. So far as muscular strength goes the ataxic has no need of support. It used to be a favorite demonstration of Duchenne's to have some of his heaviest pupils mount the backs of ataxic patients, to show there was no lack of muscular power.

After a certain number of exercises the patients no longer need to watch their every movement with their eyes, but can walk with their eyes slightly raised, then looking straight ahead, and finally with eyes closed. Only two bits of technique are insisted on in carrying out the exercises: first, every movement must be done with the greatest possible exactitude, otherwise the whole aim of the treatment is lost sight of, as it is not exercise in the narrow sense of the word, but training not to overdo movements, that is needed; second, a movement seance must never last more than seven to ten minutes. Owing to the disturbance of the sensory paths tabetics have lost the proper sense of fatigue, so the exercises may easily be overdone, and an intense tired feeling with great discouragement result. The accomplishing of exact movements seems to need supreme tension on the part of the higher cerebral motor centers—a straining of the mental attention, as it were, to catch the faint inklings of muscular and position sense that come filtering up through the degenerated sensory columns. This must always be taken into account, and not more than two short seances allowed a day.

The contraindications would seem to be very few. Where the tabetic process is very acute, where the lightning pains are frequent and severe, and where there exist *severe* bladder and rectal disturbances, the patient usually is the worse for persistence in the treatment. Old tabetic cases, where the pathological process is practically at a standstill, are especially suitable for the treatment. All are benefited to some degree; those patients least in whom some inquiry into their past history reveals the fact that they were always a little awkward—*i.e.*, were always afflicted with a natural ataxia.

In the preataxic stage—and the more exact diagnostic methods of these last few years have made this period easily recognizable—the employment of the exercises has in a number of reported cases prevented the development of incoordination. Besides, in tabes the exercises have done good in certain hysteric tremors, pareses, and incoordinations. In multiple sclerosis, as might be expected, and in the "intentional tremors" generally, they are very effectual in restoring coordination; in neuralgias, especially sciatica, they have given good results; while in paralysis agitans they have relieved the sense of constraint caused by the muscular rigidity, which in these last few years has come to be looked upon as so essential a symptom of the disease.

I have spoken only of the reteaching of coordinate movements of the legs, but a great deal of good can be done also for incoordination of the hands. Here the exercises are necessarily for the accomplishment of finer movements—writing and the like—and really good results are not easily attained. I have seen two or three patients who had acquired a very legible handwriting after having lost the power to write anything but an illegible scrawl. In this, of course, a great deal depends on the legibility of handwriting in the preataxic days. As to the coarser coordinate movements required, in eating for example, or buttoning clothes, these can undoubtedly be retaught very satisfactorily in the great majority of cases.

I said at the beginning that the other feature in therapeutics here was diet. Two

things serve to bring it into prominence just now: first, the excellent results that are being accomplished in the treatment of tuberculosis in sanatoria, where careful diet adapted to each patient is one of the main features; second, the recent appearance of the first volume of Professor Leyden's book on Diet Therapy. Professor Leyden is said to be able to feed patients on more varied diet than any man in the profession, and secure more specific results from dietetic treatment. In some of his recent lectures he has touched on dietetic questions, and I have thought that some of the points would be interesting to the readers of the GAZETTE.

He says, for instance, that when tonics and appetizers have failed of their purpose for him, he has often had salted or acid or spiced foods create the desired appetite for food—for example, herrings, caviare, sardines, pickles, salads, carbonic acid drinks, or food flavored with lemon or spiced with mustard, horse-radish, or pepper, or watercress, and the like. Most of these things I think are often considered as absolutely unsuitable for sick people.

For chronic constipation Professor Leyden seems to have two favorite dietary additions for patients with whom they agree—plentiful sour milk, and cooked or preserved fruit eaten at night before going to bed. He prefers a sort of fruit soup for this, the preserves being allowed to stand in boiled water for some eight to ten hours before being eaten, in order to thoroughly soften them.

As warming drinks in cases of chill, besides the addition of alcohol he believes in the caloric influence of sugar. Sugared liquids and chocolate owe their undoubted warming influence to this fact. For sleep he finds that a light collation before going to bed—sometimes no more than a glass of milk, a biscuit or two, or an apple—frequently make a more effective hypnotic than drugs. In weak, overtired patients, especially in asthmatic cases, he has often had a cup of coffee taken at midnight, after an hour or two of hopeless sleeplessness, bring the much desired sleep. Mohn (a kind of indigenous poppy, the seeds of which are often scattered over bread here) and lettuce are excellent dietary somnifacients. For many people, in his experience, smoking acts as a hypnotic.

Professor Leyden, like Professor Ewald, Dr. Boas, and some other of the practical clinicians here, does not seem to put overmuch faith in the all-nutrient power of milk. The opinion is generally expressed that it is not alone sufficient to support life. As to just what is needed in addition to it for perfect nutrition all are not agreed. At least milk sugar should be added, according to Ewald, while some others think that additional fat, as cream, or albumen as in eggs, is needed.

Professor Leyden seems to occupy a position apart from most people with regard to mother's milk. He considers that it possesses specific properties which should cause it to be classed among the remedies we owe to organo-therapy—that it is something very different from a mere composition of nutrient materials. The old belief that some of the qualities of the mother or the nurse may be drawn in with the milk he does not consider absolutely unfounded. He even offers the somewhat startling suggestion that the present almost universal use of cow's milk for the nutrition of infants may have an unfavorable influence on the development of generations to come.

At a recent meeting of the Society for Internal Medicine Dr. Frank presented two cases of facial neuralgia that had become so unbearable that there was question of operative interference. Both had gone the rounds of the specialists and had tried all the known antineuralgics. In one case a single Pravaz syringeful, in the other two such injections, of a one-per-cent. solution of permanganic acid gave complete relief, lasting now for more than a year in each case. Professor Eulenberg, who has used the remedy in some thirty cases, says that while it does not always give relief, it often gives marvelous results and should always be tried before operation is resorted to. It must be injected directly into the substance of the nerve, and this causes considerable pain for a time after the injection. There are no complications or sequelæ of the treatment. For sciatica it is necessary, according to Dr. Frank, to cut down and expose the nerve to insure the remedy getting within the nerve sheath.

EXTRACTION OF A BROKEN WATER TUMBLER FROM THE RECTUM.

To the Editor of the THERAPEUTIC GAZETTE.

SIR: On the 1st of October A. R., an Italian, was brought to the private hospital of Dr. T. T. Koenig in Coulterville and gave the following history: The previous evening, while intoxicated, he was dancing naked in his cabin when he slipped and sat down violently upon a water tumbler which stood

upon the floor base upwards. The glass was partly broken by the fall, but the major part of it entered the anus and passed into the rectum base uppermost. The patient claimed to have lost "gallons" of blood; but his pulse was good and there was no hemorrhage worth mentioning. As it was late in the evening when he arrived, operation was deferred till next day.

The following day (October 2) operation was performed by Drs. G. M. Hawkins and T. T. Koenig. Dilatation of the anus allowed of thorough examination, which showed the tumbler firmly wedged in the rectum, the sharp points being towards the anus and firmly embedded in the sphincter muscle. Posterior rectotomy having been performed, an effort was made by means of two Sims specula to provide smooth planes on which the jagged points could slide out while the glass was pulled upon by curved forceps inserted behind it. But this failed because the blades of the specula could not be inserted between the rectum and the sharp points of glass. The external excision was then lengthened upwards, the coccyx dissected clear of soft parts and removed. This gave sufficient room to allow of manual extraction, the mucous membrane being retracted on both sides by the large forceps already placed in position to check hemorrhage. The bleeding was slight considering the extent of the incision. The rectum was then sewed up and afterwards the skin, a tampon being placed in the rectum and a drainage tube in the wound.

The following day the patient had a passage from the bowels, and when the wound was dressed was able to stand up; and at the latest accounts was doing well. The glass when extracted measured 1.9 inches at its base, was three inches high, and 2.5 inches wide at its mouth.

G. M. HAWKINS, M.D.

COULTERVILLE, CALIFORNIA.

INGROWING TOE-NAIL.

To the Editor of the THERAPEUTIC GAZETTE.

SIR: In a personal experience of an ingrowing toe-nail, the excision of the nail or portion of it was not favorably considered. The nail was thickened, with a tendency to contracture. Relief without an operation was secured by removing the pressure of the shoe upon the toe, excising a crescent out of the nail, leaving the ends pressing upon the edge of the matrix, paring the middle of the nail down as thin as possible, and elevating the end of the nail by a pledget of cotton. An application upon the raw surface of a four-per-cent. solution of cocaine rendered the placing of the cotton under the nail painless. This cotton was changed every forty-eight hours. In a fortnight the toe was well and the nail was not disfigured.

A toe-nail is like a barrel hoop; when thick in the center it contracts well, when thin it expands. The ulceration is due to the contraction of the edge of the nail upon the edge of the matrix. The thinned nail, like the hoop, will expand and in this way cure the ulcer by removal of cause.

Respectfully,

B. H. DETWILER, M.D.

WILLIAMSPORT, PA.

CAUSE AND PROPHYLAXIS OF BALDNESS.

To the Editor of the THERAPEUTIC GAZETTE.

SIR: The question of baldness is one that forces itself on most men at some time in life, but why women should be nearly exempt is a question that has puzzled me for a long time. The common theory that baldness is due to the wearing of heavy headdresses has long been held as the correct one, and to which the hat-maker has catered by placing ventilators and other devices in hat crowns to insure a supply of fresh air. The theory is, I believe, entirely erroneous. We find hair growing on parts of the body, as in the axilla, where air is to a great extent absent and the conditions unfavorable to the growth of hair, yet it persists to the end of life.

Again, although women as a rule wear light headdresses, yet they nearly always wear a thick mat of hair which must keep the scalp as warm as a heavy cap, and this during summer and winter; yet it is rare to find a woman with a bald head. Of course, I am not speaking of baldness due to disease, such as eczema, syphilis, etc.

The following incident gave me a clue to what I consider the true theory of baldness: A farmer had a horse he was going to exhibit at the fall fair, and to add to his appearance he braided the tail, turned it up on itself, and secured it with a rubber band placed about six inches from the root of the tail. This was left on for a few days, and the result was that in the course of a few weeks nearly all the hair came out of the tail. The constriction cut off nutrition, and the follicles were starved, the hair eventually falling out.

The blood-supply to the scalp is conveyed by the frontal, temporal and occipital arteries, situated just where a tight hat would press on them and bring about a gradual starvation of the hair follicles. A woman, on the other hand, wears her hat resting lightly on top of the head, bringing no pressure whatever on the arteries, and thus escapes baldness. The maximum of hat pressure in a man comes on the frontal arteries, and in consequence we find baldness generally commences on the regions supplied by those vessels. To escape this affliction we must henceforth wear our hats on the back of the head or make hat-makers study anatomy.

M. C. BLACK, M.D., C.M.

PAISLEY, ONT.

A CASE OF POISONING BY CONVALLARIA MAJALIS.

To the Editor of the THERAPEUTIC GAZETTE.

SIR: My excuse for this communication is the rarity of recorded cases of poisoning by convallaria majalis, in contrast to the number of cases in which another drug of the same class—digitalis—has produced toxic effects. While this scarcity of cases is probably due to the fact that digitalis is prescribed so much more frequently than the lily-of-the-valley, another factor has undoubtedly some influence, namely, the preparations of convallaria differ widely in the proportions of the active principles which they contain, and many of them are practically inert.

Annie E., aged two years, was given nearly a teaspoonful of medicine, which her mother supposed was the fluid extract of cascara sagrada. About an hour later the attention of the mother was called to her mistake by the peculiar actions of the baby, and I was hastily summoned. I found that the bottle was labeled fluid extract of convallaria majalis.

The child seemed extremely restless, rolling and tossing about the bed, showing a continuous trembling of the arms and legs, with general convulsions once. She was aroused with great difficulty, and immediately relapsed into a stupor again. The pupils were dilated moderately. Axillary temperature 97° F., pulse 140 at times, and again so rapid that I was unable to count it, but always exceedingly irregular. Respirations were shallow and superficial, increased somewhat in rapidity, but very regular. The face was somewhat flushed. There was at no time any signs of gastro-intestinal irritation, and neither diuretic nor diaphoretic effect was observed. Under symptomatic treatment the child gradually regained her normal condition.

This case was one of unusual interest to me because the literature on the subject is scanty, and opinions in regard to the physiological action of the drug so diverse. It furnishes another illustration of the gross carelessness of some persons in leaving medicine bottles scattered about the house, and using them freely without even the precaution of looking at the label.

J. H. ANDREW, M.D.

500 MADISON ST., BROOKLYN, N. Y.

A CASE OF POISONING BY HONEY.

To the Editor of the THERAPEUTIC GAZETTE.

SIR: Mr. D., an attorney, aged fifty-four, on July 26, 1897, shortly after his midday meal, at which he had partaken freely of honey, felt a strange feeling come over him: an incessant burning of the forehead; all sorts of objects, wheels, strings, etc., appeared to pass before the eyes; his face felt flushed, but he was pale.

I saw him about one hour after his meal. There was extreme pallor, cold skin; heart weak and irregular. He was in a dazed condition; the eyes had a dull look, and he complained that he could not see.

I gave him an emetic (ipecac), but he soon had convulsive movements of the hands, which were controlled for the time by holding them firmly. A minute following there was a convulsion of the whole body. He did not become rigid, but unconscious, limp, and exhausted. His breathing was heavy and fast. This was soon followed by free vomiting. Consciousness now began to return. He had no recollection of what transpired during the few minutes previous to vomiting, and now complained of cold and exhaustion. I gave stimulants, whiskey and aromatic spirit of ammonia in hot water, and applied heat externally. It was about seven hours before he was comfortably warm.

After seven hours the only remaining symptoms were widely dilated pupils, a tingling sensation of tip and sides of tongue, and a feeling of exhaustion.

The honey was in the comb, freshly made, and had a decidedly bitter taste. Of several boxes examined, this was the only one that presented anything wrong, and that only in taste. He ate about a quarter of a pound.

Yours truly,

C. D. VOORHEES, M.D.

LA PORTE, PA.

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